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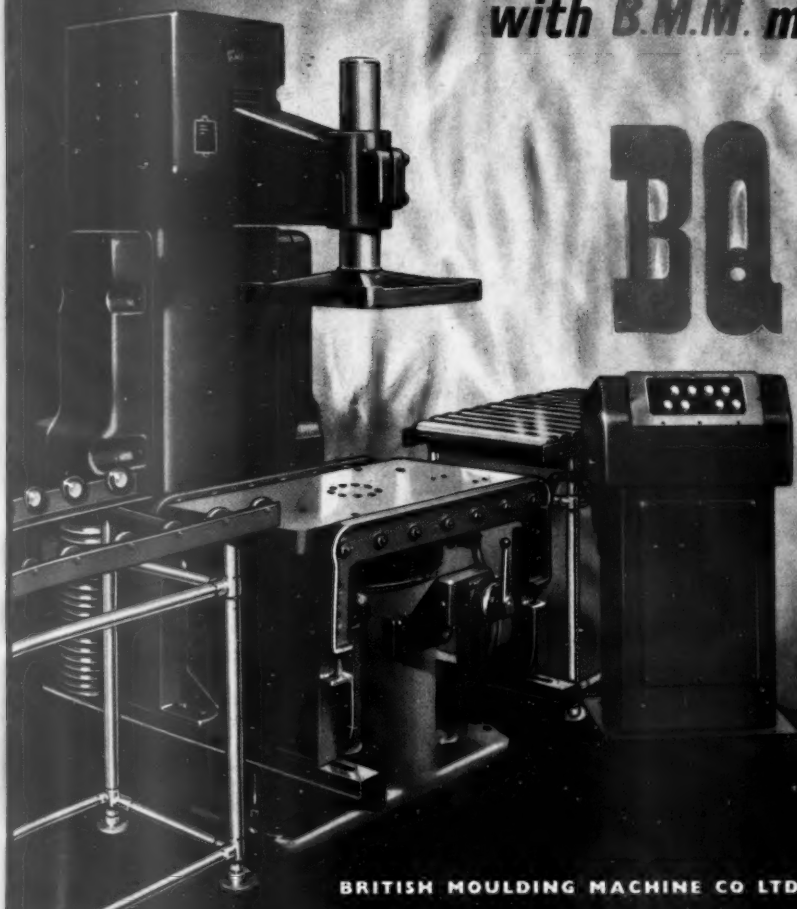

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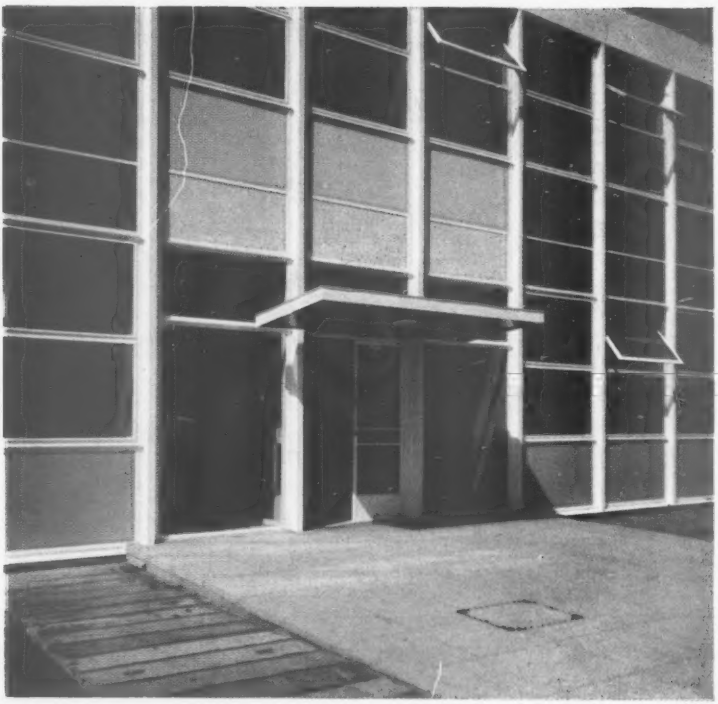

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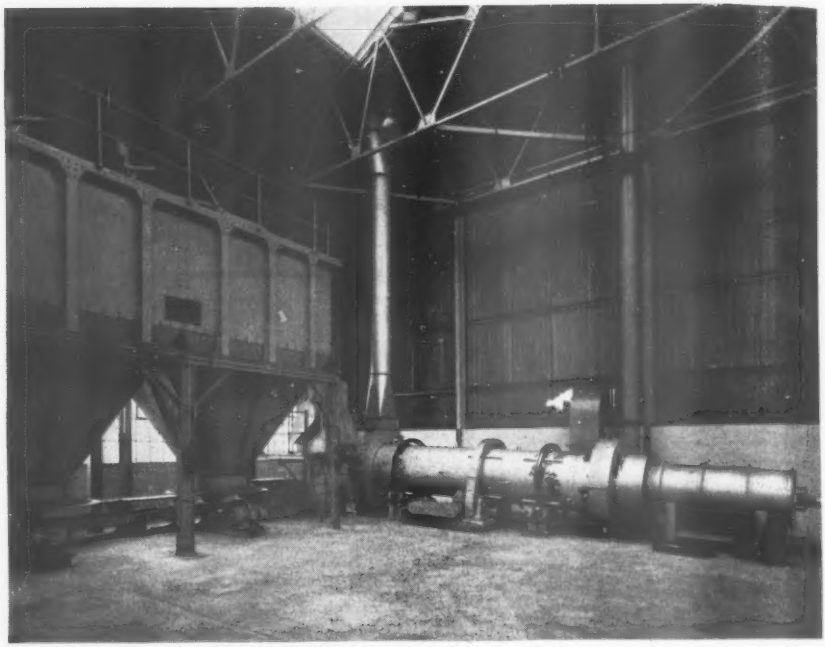

Photograph published by courtesy of The Hill Top Foundry Co. Limited, Wednesbury

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Photograph shows:

A section of the Core Shop Plant in a Large Ironfoundry. Two large Rotary Storage Hoppers feed the Wet Sand on to a Belt conveyor and then to a Belt and Bucket Elevator to the Gas Fired Rotary Sand Drier. The dried Sand is then Pneumatically conveyed to Large Storage Hoppers in the Mixing Section.

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FOUNDRY
TRADE JOURNAL

Vol. 104 MAY 1, 1958 No. 2168

South African Foundry Industry

The coming of age celebrations of the South African branch of the Institute of British Foundrymen, including as they did an exhibition of foundry products and a large-scale banquet, has focused attention on the history and size of the industry in the Dominion. An excellent history from the pen of Dr. van Eck* throws much light on this subject. The industry was started in 1831 at Cape Town, but it was not until 80 years later that coke was being made. The industry extended to the Rand in 1893 and by 1914, some half a dozen firms were established. During the war, Mr. Moore and Mr. Hobbs, the former trained in the foundry of John Williams & Sons (Cardiff), Limited, and the latter as a moulder in the South African railway shops, built themselves a reverberatory furnace to supply the mines with the larger type of non-ferrous castings. This grew into the Standard Brass, Iron and Steel Foundry Company of Benoni. Mr. Moore always had the intention of starting up a South African branch of the IBF, but apparently never found time.

The growth of the ironfoundry industry during the last two decades is shown by the consumption of pig-iron which has risen from 21,400 tons in 1936 to 204,582 in 1957. The production of steel castings has shown no spectacular rise since 1952, except last year when a 5,000 ton rise was reported. It has been around 60,000 tons each year, but on a population basis, this is a very high figure. South Africa is serviced by 178 firms, some having more than one foundry. Additionally, there are seven more attached to the transport, sugar-refining and the like. The break up of the firms is interesting as there are 113 grey iron, three malleable, three white iron, 20 steel and 57 non-ferrous. Evidently the nature of the national industry has made a quite different proportion as there is one steel foundry to every six iron foundries as against a proportion of one to ten or more in this country.

The total working force of the South African foundry industry is about 16,300, of whom 2,600 are Europeans. Included with these, we presume, are 200 patternmakers and 100 apprentices. Iron and steel castings weighing up to 25 tons have been produced and the South African railways have recently spent about £100,000 on machinery for equipping a patternshop. The above statement gives ample proof of the dynamic character of current foundry development in the Union. It is obviously a market worthy of the closest scrutiny by the manufacturers of foundry equipment. Finally, we congratulate the South African branch on the great contribution they have made to the foundry literature of the world and to the industrial development of their country.

* An extract from Dr. van Eck's paper is printed on page 521 of this issue.

Napier's 150th Anniversary

This year, D. Napier & Son, Limited, of Acton, London, W.3, are celebrating the 150th anniversary of its founding by David Napier, a Scot who came to London in 1808 and set up as an engineer. Included in the programme of celebrations is an exhibition to be held at the Tea Centre, Regent Street, London, S.W.1, from June 3 to 14 inclusive. At the exhibition most of the products made by the company since its inception will be covered.

David Napier's business first became famous, in the 1820s, for its printing machines, one type being used by Hansard, the Parliamentary printer of those days. Printing-machine production continued until about 1873, but long before that the company had expanded its activities to embrace a wide variety of products. It produced a machine which made bullets more accurately and at a greater rate than previous methods had made them; also coin-weighing machines of great ingenuity and accuracy; machines (including cranes) for use in arsenals and on the railways; a ship's compass which made a continuous record of the vessel's heading; a peat compressor, and countless items for optical and other instruments.

At the end of the century Napier (then owned by one of David Napier's grandsons) turned to the production of motor cars, which set a standard of mechanical excellence which few competitors could match. Soon after the outbreak of war in 1914, Napier abandoned cars for aero-engines and airframes. The first aero-engine of its own design, the "Lion," was the undisputed leader of its class in the years immediately following the end of the war. Then, after a brief re-entry into the motor-car industry the firm staked its fortunes on the aero-engine and confined itself to this industry until after the end of world war II, when it took up, in addition, the manufacture of diesel engines and turbo-blowers, rockets and experimental ram-jets, a surface-heating system now widely adapted to aircraft as a protection against icing dangers, and accepted commercial orders for high-precision castings.

Gauge and Tool Exhibition

Although the Gauge and Tool Exhibition will be open to the public in the National Hall at Olympia from 10 a.m. on May 12, the official opening ceremony, by Sir William Lyons, managing director of Jaguar Cars, Limited, will not be until noon on the following day. The opening ceremony has been postponed in order to avoid clashing with the opening of the Production Exhibition in the adjoining Grand Hall.

The Gauge and Tool Exhibition will be open daily (except Sunday, May 18) from 10 a.m. to 6 p.m. On the final day, May 21, the exhibition will close at 5 o'clock.

Latest Foundry Statistics

Copper-base Alloys. Figures recently released by the British Bureau of Non-Ferrous Metal Statistics reveal that the production of copper-base alloy castings in 1957 was at 77,148 tons, just 93 tons higher than in the previous year. The December output was 6,451 tons—well up to the monthly average. Pure-copper castings are returned each month at 650 tons, giving the yearly amount as 7,800 tons, so there is no change. Output of copper-based castings during February was 6,575 tons. Production during January and February was 12,974 tons against 13,525 tons in the similar period in 1957.

Aluminium Development Association

At the annual general meeting of the Aluminium Development Association, held last month at 33, Grosvenor Street, London, W.1, Mr. S. E. Clotworthy was elected president of the Association, and Dr. Maurice Cook, chairman of Imperial Chemical Industries, Limited, metals division, vice-president.

Mr. Clotworthy is managing director of Northern Aluminium Company, Limited, and has been with that company for over 30 years. He has served in various capacities on many leading organizations of the metallurgical world, and during the second world war held positions at the Ministry of Aircraft Production. He is a member of a number of technical institutions and has also served as chairman of the sales and export committee of the Aluminium Industry Council and on the Council of the Society of British Aircraft Constructors.

The new chairman of the executive committee is Dr. N. P. Inglis (research director of ICI, metals division) in succession to Mr. J. H. Mayes, who has served in that capacity for over two years. The chairman of the ADA publications committee, Mr. R. Chadwick, has resigned and Mr. E. D. Iliff (development manager, Northern Aluminium Company) has replaced him. Mr. H. M. Bigford, who has completed his term of office as chairman of the ADA standards committee, has been replaced by Mr. E. G. Robinson (also of the Northern Aluminium Company), and the chairman of the marine committee for 1958-59 is Mr. F. Porcher (ICI metals division).

A newly-formed committee to study the applications of aluminium in chemical and nuclear engineering has been set up by the Association and Mr. E. E. Spillett (British Aluminium Company, Limited) will be its first chairman. To improve the organization of the work of the ADA technical committees it has been decided to make a new appointment of committee secretary, and Mr. K. W. Brice has been selected for this post.

Basic Materials Prices Continue to Fall

Prices of basic materials used in the manufacturing industry fell in March for the eleventh consecutive month—by 1.4 per cent. to 97 (1954 = 100). The Board of Trade index number is now 3.6 per cent. below the March, 1957, level, but fuel used by industry now costs 4.9 per cent. more, and materials and fuel used in mechanical and engineering industries cost 2.7 per cent. more.

Help. The Journal office has been ransacked—but without finding the back numbers required by the Sandholme Iron Company, Limited, who wish to bind complete volumes of the FOUNDRY TRADE JOURNAL, period 1952 to 1957. Will any reader who has surplus copies please come to the rescue. The actual back numbers missing from those stocked at Sandholme are as follow:—

1952: Nos. 1856, 1857, 1858, 1859, 1860, and 1873: *1953:* Nos. 1902, 1906, 1927, 1930, 1933, and 1934: *1954:* Nos. 1946, 1948, 1949, 1953, 1956, and 1960: *1956:* No. 2060, and *1957:* Nos. 2123 and 2129. Readers who can help by supplying any of these missing copies should write direct to Mr. W. Martin Lord of Sandholme Iron Company, Limited, Todmorden, Lancs, stating what is available.

BILSTON FOUNDRIES' *New* BATH PLANT

For some considerable time, the production in the United Kingdom of moulds for domestic-bath castings has been by using mainly impeller-type ramming machines: in the last few months, however, two new and entirely independent high-production plants have come into operation, which produce the moulds by jolting. In some degree, the plants are similar—both use moulding machines of the same manufacture and type—but in many important respects the layouts and ancillary plant differ considerably. In the account which follows, the latest of the two works to come into production, that of Bilston Foundries, Limited, is described and in a forthcoming issue the second plant will be dealt with.

In erecting their new plant for domestic-bath castings manufacture at Batmans Hill, Bilston, on a 17-acre site about one mile from their existing works at Highfields, Bilston Foundries, Limited, kicked off with a tremendous advantage. The site had been levelled and planning and construction were unhampered by the need to continue production from older plant on the same site. Thus, a " model " foundry could be envisaged and indeed erected, it is particularly interesting, therefore, to examine the trends followed in planning and execution of the project.

Main Buildings and Plant

In this account, a brief summary of the site development will be given first and this will be followed by detailed descriptions of the plant installed. At the outset, it must be made clear that only part of the land is yet developed and the company's old works is still producing about 1,800 baths weekly. In the new plant, it is intended to concentrate on one or two popular designs of baths which constitute the builders' merchants' major requirements. The new plant is therefore designed specifically to produce 60 baths per hour per eight-hour day, of average weight 2 cwt. (but rising to 275 lb. for the firm's new design of apron-type bath). Production centres about two (American) Herman moulding machines, furnished by Pneulec, Limited. Each of these being of a double-station indexing type, there are two pattern stools. The molten iron (up to 17 tons per hour) is furnished from a standard Roper cold-blast cupola, there being two furnaces installed for use on alternate days. Mould movement, pouring and knocking out is fully mechanized and there is a most elaborate sand plant, capable of reconditioning a total of 240 tons per hour. The latter has also been designed by Pneulec, Limited, but incorporates sand mills made by August's, Limited, and other specialist-built items.

The general layout is shown in the simplified plan view, Fig. 1, the cupola chargers and stockyard only being external to the main building, which is 310-ft. long by 104-ft. wide and a minimum of 40-ft. high to crane rails. Well over half of the area of the spacious, well-ventilated and lofty shop is devoted to sand plant, showing clearly the great importance now attributed to proper handling, conditioning and storing this material. All cast-steel precision-built moulding boxes (Fig. 2) of extra heavy construction are employed, with the exception of three experimental boxes of welded construction and one of high-duty cast iron.

Stockyard and Cupolas

The stockyard is situated along one of the long sides of the building and is spanned by a Morris overhead gantry crane of 5 tons capacity, 100-ft. span, 210-ft. travel and 40-ft. high. All raw materials arrive by road at present, although a railway adjoins the site. Ferrous materials (pig-iron and scrap) are off-loaded by magnet, suspended from the crane, and coke handling is now also being arranged by grab bucket from the same crane although a duplicate crane is on order. These same methods are used for loading the weigh-buckets of the cupolas with metal and the coke and limestone hoppers at the charging station.

The pair of cold-blast cupolas, as stated earlier, are of more or less standard design, but modified in case water-cooling is required at a later date.

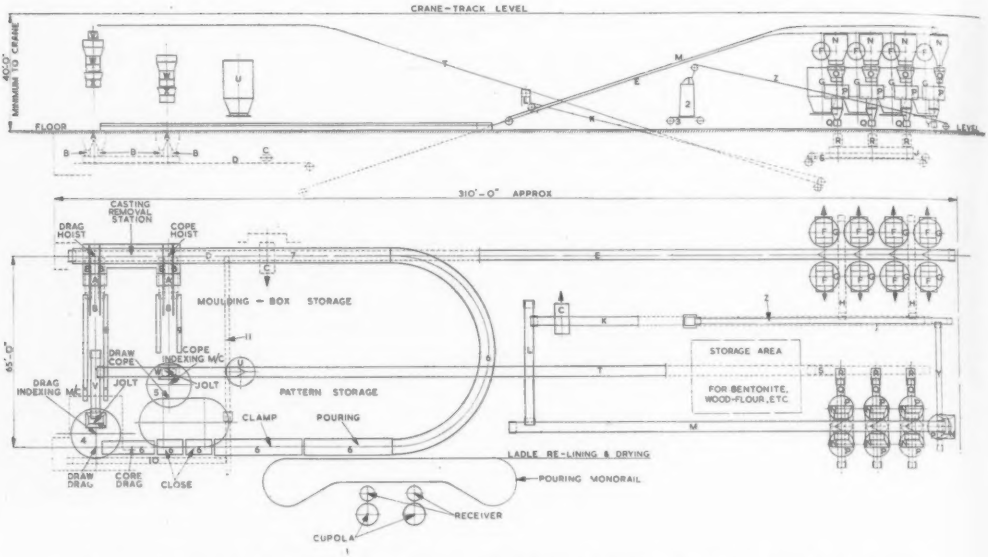


FIG. 1.—*Simplified plan and elevation of Bilston Foundries' new bath-making foundry.*

KEY: (A) shakeout machines, (B) 24-in. belt feeders; (C) magnetic separators; (D) 42-in. belt conveyor; (E) 42-in. belt conveyor; (F) 6-ft. dia. rotary screens; (G) 30-ton storage hoppers over rotary-table feeders; (H) 30-in. belt conveyor; (J) 36-in. belt conveyor; (K) 36-in. belt conveyor; (L) 36-in. belt conveyor; (M) 42-in. belt conveyor; (N) storage hoppers over mills; (O) batch hoppers over mills; (P) 8-ft. 6-in. dia. mixing mills; (Q) 30-in. belt conveyor; (R) 90 to 100 tons per hr. aerators; (S) 36-in. belt conveyor; (T) 42-in. belt conveyor; (U) mixing system clearing hopper over rotary-table feeder; (V) 36-in. belt conveyor; (W) moulders' storage hoppers; (X) moulders' batch hoppers; (Y) 24-in. belt conveyor; (Z) 24-in. belt conveyor; (1) 45 to 50 tons per hr. aerator; (2) "strong" sand-storage hopper; (3) 24-in. belt conveyor; (4) drag indexing machine; (5) cope indexing machine; (6) sections of powered conveyor; (7) section of gravity conveyor; (8) overhead rails for cope and drag box hoists; (9) gravity roller conveyor; (10) 24-in. belt conveyor, and (11) 24-in. belt conveyor; dust extraction plant is not shown.

Of 93-in. external diameter, they are at present lined down to 59 in. to give a melting rate of 11 tons per hour instead of their nominal capacity of 17 tons per hour at 70-in. dia. Each furnace is equipped with Roper wet-type dust-arresters of the now familiar cone and water-curtain type, incorporating recirculation of water, and a settling tank from which sludge is removed by scraper conveyor. The cupola chargers were made by the same firm and are of the type which, pivoted about the weigh-hopper at ground level, swivel from one furnace to another according to whichever is in use. Roper blast-pressure/volume-control is incorporated in the blast system which is designed to deliver up to 10,000 cub. ft. per min. Molten-metal delivery is continuous, as is slagging and slag-granulation. As shown in the illustration at the head of this article, the centre portion of the stockyard gantry is roofed over.

The metal is retained in a gas-heated receiver of 2½ tons capacity and from there is collected as required in a barrel-type double-spouted ladle (Fig. 2), carried on trunnions pivoting about its

FIG. 2.—*The pouring ladle is carried on a telpher monorail, with the pouring operator in the cab. Completed bath moulds are shown being poured.*

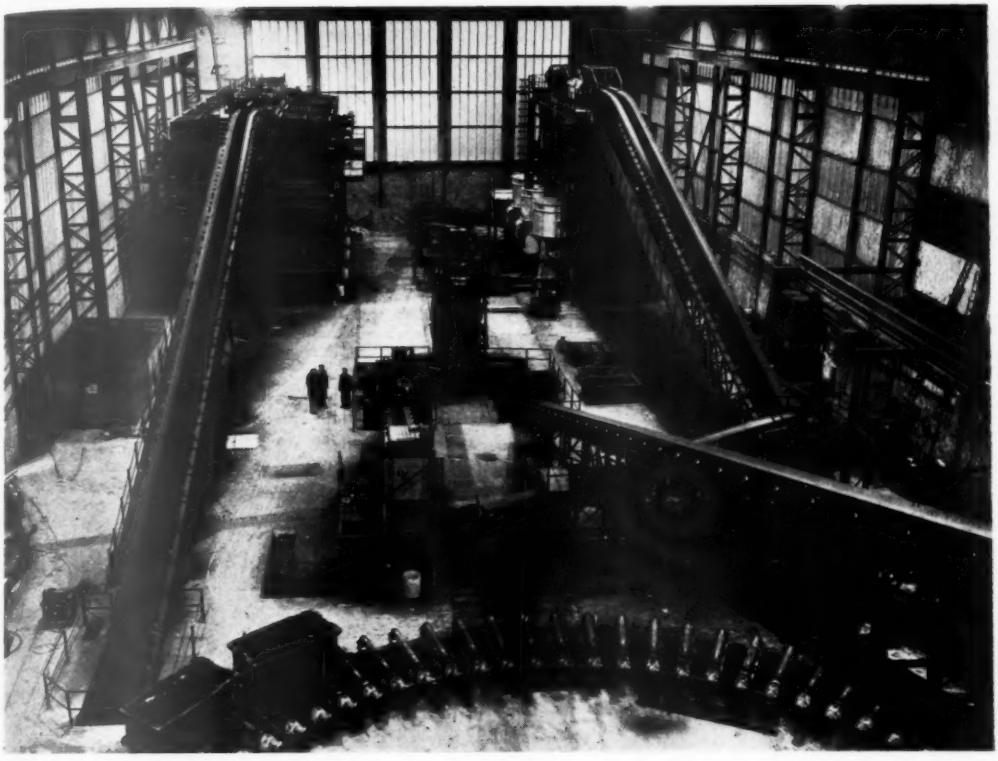


FIG. 3.—*General view of the sand plant, taken from the moulding end of the foundry. On the left at the rear are the screens and storage hoppers and on the right, the batch hoppers and August's mills. In the foreground, is a section of the curved mould-conveyor track.*

horizontal axis. The ladle is moved on a telpher-crane suspension on a monorail, the arrangement including a cab and driver. This single ladleman is in complete control of metal collection from the receiver, mould movement into the pouring area, pouring, and finally, mould movement out of his area.

As a safeguard, the barrel ladles (of 17-cwt. capacity) have double spouts on both sides and quick release trunnions, to permit rapid emptying if necessary. The spouts are standard, and made up with refractory to a special template or former, so as to permit equal metal delivery from each, a levelling device being built in to the ladle suspension as an extra refinement.

To permit emergency disposal of molten metal in the event of a major breakdown, a pig-casting machine, made by H. Richards & Sons of West Bromwich, has been installed. This carries a single-strand conveyor of pig moulds at 26-ft. centres, and is capable of dealing with 17 tons per hour, *i.e.*, the whole output from one cupola. It delivers the pigs into the stillage in which they are taken by fork-lift truck to the stockyard. This same truck also takes out runners, risers and heads, collected in stillages adjacent to the knock-out station.

Sand Plant

The general layout of the sand plant may be appreciated from the plan view (Fig. 1) and the general view taken from the moulding-machine end of the foundry, Fig. 3. It comprises seven August's 40-tons-per-hour-capacity mills—six for production milling and one for preparing "strong" sand—in addition to more-than-adequate storage capacity, belt conveyors, elevators and ancillary machinery. All was installed by Pneulec, Limited.

Briefly the sequence of operations in the sand-treatment system is as follows: From the two Sterling shakeouts (Fig. 1, A) each utilizing two, 12- by 6-ft. vibratory screens (and to which dust-extraction plant is now being added), the sand is collected by two 24-in. wide horizontal belt-conveyors (B), 14-ft. long. From the ends of these, it falls on to a horizontal cross-belt (D), 42-in. wide, passing under an "Overband" type of magnetic separator (C), on to the inclined belt (E) of the same width and 160-ft. long, culminating in a horizontal length of conveyor, 33-ft. above ground level. Here

FIG. 4.—*General view of the moulding plant and mould conveyor, photographed from the sand-plant end of the foundry. The belt delivering sand to the moulding-machine hoppers occupies the central position; moulds are delivered to the conveyor on the left and travel around to the knockouts on the right.*

the sand is selectively ploughed off (there are four Vee-ploughs) into one or more of four pairs of 6-ft. dia. horizontal (½-in. mesh) screens (F), arranged below and on either side of the belt. These discharge, severally, into eight vertical cylindrical storage hoppers (G), each of 30 tons capacity and each having a rotary-table delivery mechanism at its lower end. From the feed tables, the sand is taken selectively on two short feeder-belts (H) to a sequence of three 36-in. wide belts which turn the sand through two right-angles and elevate it through 36 ft. to bring it to seven 10-ton storage hoppers (N), one situated over each of the August/Simpson mills (P). The mills are 8-ft. 6-in. dia., and batch hoppers (O), are incorporated between the storage hoppers and the mills. Selection of the discharge point and mill operational-sequence is at all times controlled by the sand-plant operator from a control and indicator desk situated at the level of these hoppers. The six production mills work in an automatic (3-min.) mixing cycle, water additions being made to a set standard. (Here it is interesting to note that provision has been made to dump any mill-load that is shown on test to be too wet). Each pair of mills has a 30-in. wide conveyor-belt (Q) below it, spilling sand first to the aerators and then to a horizontal 36-in. belt (S) which drops the sand on to the main feed conveyor (T) which latter elevates it to the 15-tons capacity hoppers above the moulding machines. (The capacity of these machine hoppers is sufficient for making five half-moulds—a safe working limit set by the moulding-machine makers.)

"Strong" Sand

In the seventh August's mill, "strong" sand is prepared for "bleeding in" to the system sand. Here Berkbond and wood-flour additions (no coal-dust) are added to new raw sand (50 per cent. Congleton, 50 per cent. Wombourne red), and milled. The sand so prepared is discharged on to an inclined belt and then is directed through a 90-deg. changeover point, to join the main mill-feed system (after passing its own aerator (Fig. 1 (1), storage hopper (2) and delivery belt (3)).

Moulding

The pair of US-built Herman moulding machines, as shown in Figs. 1, 5, 6, and 7, are situated in the open end of a U-shaped length of mould conveyor.

FIG. 5.—*Production of the cope bath mould on one of the indexing Herman machines. On the right-hand side, sand is being delivered to the box and on the left, stripping has been completed and a mould-half is held by the Asea hoist preparatory to closing.*

This consists of five independently-driven straight sections of powered-roller track, a curved section (also power-driven) for cooling, and a short, straight, gravity-section, leading to the two knock-outs (one for cope- and the other for drag-half moulds) (Fig. 8). Only the first section of this track is non-reversible; *i.e.*, all sections have individual or sequence controls, the latter being subject to limit-switching when moulds reach set points.

The moulding machines have pattern stools size 4 by 6 ft., and a bumper capacity of 30,000 lb. (bath-mould box-parts average 54 cwt. for cope and 34 cwt. for drag, the individual complete half-moulds weighing 80 cwt. and 60 cwt. respectively). The index-head pivots through 180 deg.; two drag patterns are carried on one machine and two cope patterns on the other. At each station, while one half-mould is being stripped and discharged on to the conveyor, its duplicate pattern is being "flasked-up," filled with sand and jolted.

The Drag Halves are jolted in two stages—there is a pre-jolt of 6-sec. duration and then a further 6-sec. period after lowering on to the sand (through the box bars) a set of pattern-weights held in a frame. The moulding box has a 6-in. rebate at the top edge and the weights consolidate the sand below this to prevent sand drop-out. The rebate also helps to provide vent space for the mould while it is being poured.

Cope Half-moulds are closed on to the drag from a circular closing track with two "grabs" on it, each carried by an Asea 5-ton-capacity hoist, permitting two hoisting and two travelling speeds. These are automatically set, *i.e.*, fast lowering of copes is arranged to within 3-in. of the closed position. Box-parts are clamped together by the hammering into position of a yoke across taper lugs incorporated in the box-part construction.

There are 24 sets of boxes in the whole system—three at the pouring section, three in the pre-pour position, four in process of assembly and clamping, and the rest on the powered curved track, at the knock-out or on the machines. The cope conveyor will only accommodate five box-parts.

The ladleman, having poured up to three moulds, can discharge them automatically to the knock-out. "Joystick" controls (Fig. 7) are arranged at the closing and pouring sections of the horizontal straight lengths of mould track. Four driven-rollers normally support each mould on the curved section of the track, but three are adequate to impart the drive. An important feature at each mould station is the sand-delivery mechanism. Here, a batch hopper, extending from the main overhead hopper,

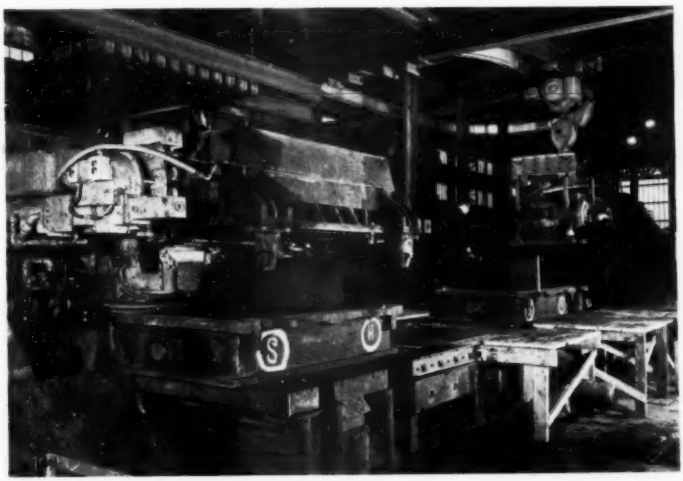


FIG. 6.—*Production of the drag halves of bath moulds. Stripping (after turnover) has been completed for the mould in the centre, whilst the top-half is about to be lowered on to the mould on the right-hand side. In the top left-hand corner, the weights used to consolidate the mould while jolting can be seen.*

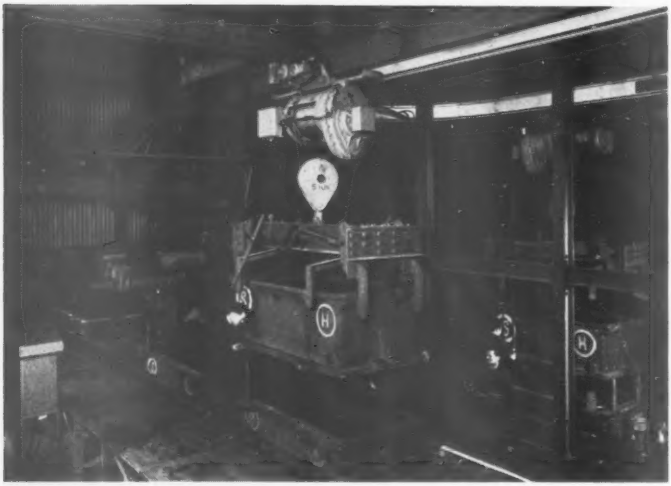


FIG. 7.—*Another view of the mould-closing station, showing the control pulpit (left) and "joystick" controls (right) adjacent to the mould conveyor.*

measures a set volume of sand and distributes it evenly over the area of the box, without spillage—and this, of course, has to be effected at the rate of 60 per hour.

Moulding Sequences

The sequence of moulding operations—controlled from a pulpit at each machine—are as follow:—

Drag: (*a*) Place the box-part on the machine and clamp; (*b*) fill box with pre-determined quantity of sand; (*c*) pre-jolt; (*d*) present weights in frame; (*e*) second jolt; (*f*) weights off; (*g*) index through 180 deg. (during which time the box rolls over); (*h*) box is drawn from the pattern, and (*i*) when the box clears the "foul" line, the pattern automatically rolls back. During this period, the first four operations of the cycle have been carried out for the other pattern on the stool.

Cope: (*a*) *and* (*b*) Same as for drag half; (*c*) put on runner-box; (*d*) jolt; (*e*) index through 180 deg.; (*f*) release clamp (foot operation); (*g*) remove runner-box former and downstick; (*h*) vibrate pattern; (*i*) draw mould from pattern; (*j*) remove mould by Asea hoist to meet drag-half (travelling from drag machine) at the closing position, and (*k*) replace downstick.

Production Manning

Excluding maintenance staff, cleaners, and the Stacatruc driver, a total complement of 19 men is needed for moulding, pouring and shaking-out on this bath plant; two men are employed on the sand plant and three for operating the cupolas, making 26 in all. This works out at about 0.316 man/hours per bath on the new plant as compared with 1.612 man/hours for the firm's impeller-rammer bath production plant in the old works.

Control Systems

Most noteworthy in this new foundry are the elaborate interlocked electrical control systems. The majority of these are housed, along with banks of switches, in the separately walled-off sub-station at the south-west end of the foundry. For example, the sand system is based on three independent sequences—shake-out to the screens, milled sand to the machines, and "strong" sand to the mill feed—all of which embody motor controls which cannot be set in operation until complementary movements are also engaged—this to prevent any possibility of over-running. The electrical load is divided over two 1,000 kva. transformers, and the sub-station of course, also houses meters and main switches.

Of interest on the control side is the cupola-charging pulpit (Fig. 9), which combines both pneumatic and electrical interlocks. For example, the

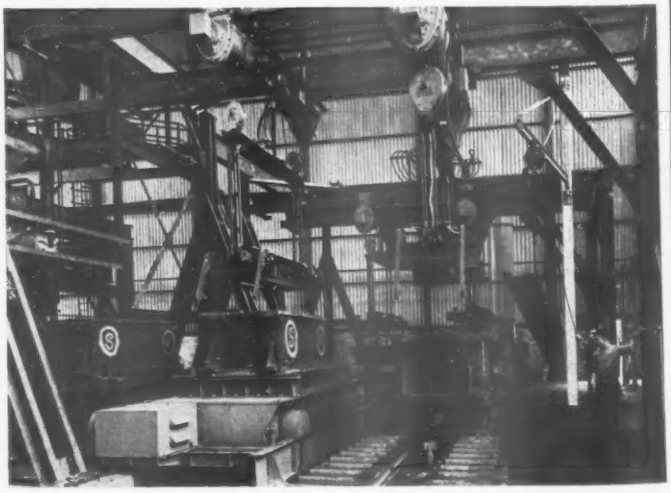


FIG. 8.—*One of the knockout stations at Bilston Foundries' bath plant. A completed bath is being removed for transport to the shotblasting section.*

FIG. 9.—*Charging-control station at the cupola plant; one of the cupolas is shown on the left-hand side, the coke and limestone hoppers occupy the centre, and the weigh hopper and pneumatic and electrical controls are visible in the lower portion of the illustration.*

man in the crane cabin picks up metal and (by means of his variable-flux magnet) loads the metals into the weigh-hopper. When the correct weight is reached, the man at the control desk pulls a lever to open the hopper's doors and discharge its contents to the cupola-charging bucket (and again the doors are closed). Then the same operator, by depressing a button, sends the charge bucket up to the coke and limestone weigh-hopper (previously filled by vibratory feeders from the coke and limestone bunkers). He then pulls a second lever to deliver the right amount of coke and stone on to the top of the metal, and re-shuts the doors. Finally, he depresses two buttons (*a*) to start the charge bucket on its incline (eventually to empty its contents into the furnace and return), and (*b*) to re-start the vibratory feeders to weigh first coke and then limestone ready for the next charge. The actual deposition of a charge from the bucket into the cupola-shaft is effected when the bucket strikes a bumper pad at the back of the shaft which serves to release the doors. To charge at the rate of 17 tons per hour means that the cycle for each charge must not occupy more than five minutes, but in actual fact the whole of the operations can be carried out in three minutes.

Other notable plant items incorporated in the new foundry, but which are subsidiary to this present account (and therefore will not be elaborated upon here) include a large continuous type of Wheelabrator shotblast plant (Fig. 10), for cleaning the bath castings; the use of Hill's motor-operated roof-panel ventilators and a combined wet dust-arrestor and sludge-disposal plant. Noteworthy, too, is the use of strip-lighting and panelling in the enamelling bay to prevent any dust accumulation in this section. Oil-fired duplex muffles have been installed for enamelling. An interesting point of bath design has been the restriction of major grinding operations in the dressing shop to an automatic line for removing the runner stubs located at one end of the bath. Pattern changes on the Herman machines, although quite complicated, have been so studied and broken down that they can be accomplished during a lunch-time break if necessary.

Conclusion and Acknowledgments

In expressing thanks the directors and staff of Bilston Foundries, Limited, for permission to publish this account and for assistance in its preparation, credit is also due to the main contractors and sub-contractors (some are mentioned on page 518). Invariably, the construction of a new plant of somewhat revolutionary design involves a high level of detail co-operation between the foundry staff and suppliers of machinery and

FIG. 10.—*Automatic shotblasting unit installed by Tilghman's, Limited, at Bilston Foundries' new bathmaking plant.*

Bilston Foundries' New Bath Plant

equipment, and the possibility of "teething" troubles cannot be ruled out. It is pleasing to record, in a valedictory comment, how well this spirit of co-operation at the new Bilston Foundries plant has "oiled the wheels of industry" so that construction has gone forward apace and quite optimistic production forecasts have been turned into reality.

MAJOR CONTRACTORS AND EQUIPMENT SUPPLIERS.

The major contractors for Batmans Hill Foundry include:—*Civil Engineering:* Sir Alfred McAlpine & Son, Limited. *Constructional Engineering:* James W. Ellis & Company, Limited. *Plant Supplied:* Pneulec, Limited. *Specialized Plant:* Sand mills, Augusts, Limited; raw-material-handling equipment and melting plant, E. A. Roper & Company, Limited; muffle furnaces, Carborundum Company, Limited; cranes, Herbert Morris & Company, Limited, and shotblast plant, Tilghman's, Limited. *Installation Work—Plant and Equipment Supplies, etc.:* Midland Electric Installation, Limited; Irving Cranes, Limited; Herbertson & Company, Limited (steelwork erection); Broom & Wade, Limited; K. & L. Steelfounders, Limited (moulding boxes, machined by Gothic Engineering Company, Limited); Dallow Lambert & Company, Limited (dust-extraction); Vacu-Blast, Limited (auxiliary shot-blast); W. & T. Avery, Limited (scales, etc.); Westwood Dawes & Company, Limited (belt conveyors); Bromsgrove Heating Company, Limited (amenities block heating); Aerospray Association, Limited (spraying equipment); English Electric Company, Limited (transformers), etc., and S. Mole & Sons (Green Lane Foundry), Limited (pattern frames). *Sub-contractors include:* Rapid Magnetic Machines, Limited; Electro Magnets, Limited; Dewhurst & Partners, Limited (control panels, etc.), and Sterling Foundry Specialties, Limited (knockouts).

Standards Pass the 3,000 Mark

In the period between the foundation of the British Standards Institution in 1901 and the end of last year, more than 3,000 British Standards were issued. This fact emerges from the recently published "BSI Yearbook" for 1958, which includes a numerical list and brief descriptions of all standards current on December 3, 1957.

Apart from British standards and codes of practice, the 520-page book lists the publications issued by the International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC) and the International Commission on Rules for the Approval of Electrical Equipment (CEE). Other sections of the book detail BSI services. There is also a comprehensive index in which all British standards are listed according to their subjects.

Copies of the yearbook have been sent to all subscribing members of BSI, now totalling some 10,000 commercial firms, professional and trade associations, local authorities, and individuals. The book is also available for purchase at 15s. (plus 1s. 6d. postage and packing).

INDIAN IRON & STEEL COMPANY, LIMITED—Mr. Alfred D. Vickers has resigned from the board.

VENT-AXIA, LIMITED—Mr. Herbert P. Bridge and Mr. David C. Akester have joined the board. Mr. Christopher M. Courage has resigned from the board. Mr. Rodney S. Hunter has joined the board of the subsidiary company, Axia Fans, Limited.

Institute of Metals

Election of Officers

New president of the Institute of Metals is Marshal of the Royal Air Force Lord Tedder, Chancellor of the University of Cambridge and chairman of the Standard Motor Company, Limited. Mr. G. L. Bailey, Mr. R. D. Hamer, and Sir Ronald Prain have been elected vice-chairmen.

Mr. Bailey is director of British Non-ferrous Metals Research Association. Mr. Hamer is vice-president and a director of Aluminium Laboratories, Limited. Sir Ronald Prain is chairman of the Rhodesian Selection Trust, Limited, and the Anglo Metal Company, Limited, and is a director of the Wankie Colliery Company, Limited. He is also on the Council of the British Bureau of Non-ferrous Metal Statistics, and is a director and a member of the advisory committee of the International Nickel Company of Canada, Limited, and holds similar positions with the Mond Nickel Company, Limited. He is also a director of many other companies with metallurgical interests.

New members of the Council of the institute are Mr. Geoffrey Cunliffe, deputy chairman and managing director of the British Aluminium Company, Limited, Dr. L. B. Hunt, manager of the industrial division of Johnson, Matthey & Company, Limited, Lord Kirkwood, a director of the Imperial Smelting Corporation, Limited, Mr. W. F. Randall, managing director of the metals group of the Telephone Construction & Maintenance Company, Limited, and Mr. F. W. Tomlinson, managing director of Pyrotenax, Limited.

Awards

Professor Emeritus Robert Salmon Hutton, who is to receive the Institute of Metal's Medal in Platinum for his "outstanding work in connection with the science and practice of non-ferrous metallurgy," gained a first-class honours degree at Owens College, Manchester, in 1897, and spent his first three years as a graduate doing research work in Manchester, Leipzig, and Paris. From 1900 to 1908 he was Lecturer in Electrometallurgy at Victoria University, Manchester, during which time he invented the electric furnace method of melting silica and helped in its industrial exploitation.

In 1921 Professor Hutton was appointed first director of the British Non-ferrous Metals Research Association and another honour followed in 1932 when he was appointed first Goldsmiths' Professor of Metallurgy at Cambridge University, a post from which he retired in 1945. Since then he has devoted most of his time to higher technological education as a member of the City and Guilds of London Institute and as a governor of the Imperial College of Science and Technology. Professor Hutton is an original member of the Institute of Metals, a founder member of the Faraday Society, the American Electrochemical Society, and of ASLIB (Association of Special Libraries and Information Bureaux).

Dr. John Herbert Hollomon, who is to receive the institute's Rosenhain Medal "in recognition of his outstanding contributions to knowledge in the field of physical metallurgy," is manager of the metallurgy and ceramics research department of the General Electric Research Laboratory, Schenectady, New York, which he joined in 1946 as assistant manager of the Metallurgy Research Department. He has been adviser for metallurgical activities at the Knolls Atomic Power Laboratory and since 1953 has been a member of the high-temperature panel of the National Science Foundation. Dr. Hollomon is also Adjunct Professor at Rensselaer Polytechnic Institute.

"Tricks of the Trade"

Modification to Avoid Blind Working

. . . by "Jacques"

Traditional methods of moulding are sometimes accepted as indispensable for the routine-production of standard repetition castings which lend themselves to the machine or hand-plate making. Quite often, such moulding routine is geared for the production of "tops" and "bottoms" in the conventional manner, and any deviation from the established cycle of operations is ruled out by special circumstances or other reasons, irrespective of likely advantages to be had from an easy alternative method of manufacture.

FIG 1.

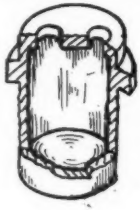
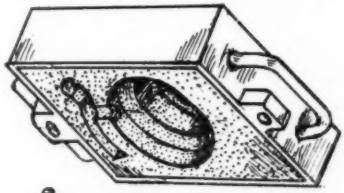


FIG 3.

FIG 4.



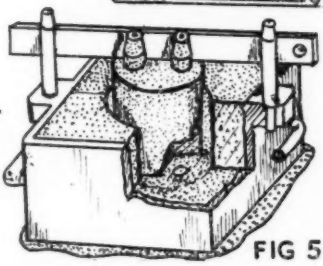


FIG 5.

Pattern details, assemblies and moulding methods for a junction-vessel casting (shown in Fig. 3).

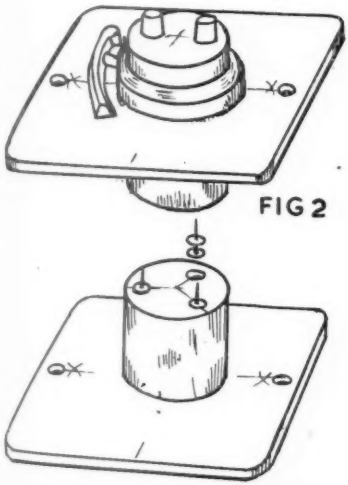


FIG 2

FIG 6.

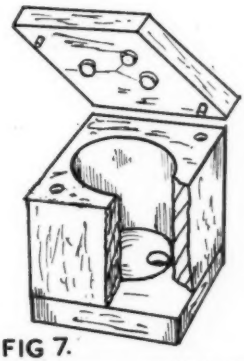


FIG 7.

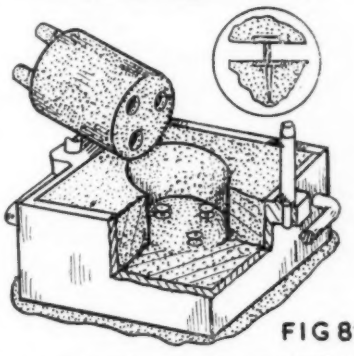


FIG 8.

Not Fool-proof

Regular production of a type of pressurized junction-vessel castings was required from the split-pattern shown in Fig. 1. This was mounted on to a hand-plate in a quite usual manner as indicated in Fig. 2. A cut-away section view of a casting is shown in Fig. 3; for obvious reasons, the castings were poured in the position shown in this illustration.

The core-prints (with vent-holes) shown in Fig. 4 were the only outlets for gas from what was virtually a "floating" core and three were required for carrying this in the manner shown in Fig. 5. As the core-prints were planned to be in-line with the box-pins, to ensure correct alignment with the "blind" pattern-prints in the top half-mould, a straight-edge check was necessary before closing the moulds. Repeated practice and a "good eye," enabled the cores to be placed on to the chaplets, fairly accurately, without the necessity of a second or third adjustment to ensure the in-line position. A shake from the whitening-bag on to the cored-up mould, and the open, mould core-prints in the top, provided a visual check when closing the mould.

Alternative Method

This somewhat haphazard method of straight-edge checking for core position, was obviated by drilling the base of the pattern to take pin-chaplets of

suitable size in pre-determined positions, as shown in Fig. 6. These three chaplets are now put into their respective holes in the pattern before ramming up the half-moulds, and of course, are left behind in their true position in the mould after withdrawing the pattern.

Three matching well-tapered bosses are pressed into the core base by means of the additional corebox section, after first strickling the core off level in the usual way, shown in Fig. 7—the additional corebox piece being so dowelled as to ensure correct boss register with the chaplets already in position in the bottom half-mould. Fig. 8, shows the assembly and the arrangement described.

In this manner, a seemingly long-way-round method of moulding can be considerably shortened by adapting the job to the one-box, cover-core system. The revised arrangement decisively obviates the occasional core-float and out-of-line position; no chaplets are required in the casting and there is therefore less fettling needed and leaking under pressure at points where chaplets were placed is eliminated.

These particulars and sketches will probably suggest to experienced foundrymen other mould- and core-making jobs on which an "inquest" would indicate an improvement over conventional methods.

Ford Motors not "Niggardly" to Shareholders

Stating that he could not accept the suggestion that the Ford Motor Company, Limited, had been "niggardly," the chairman, Sir Patrick Hennessy, at the annual meeting on April 18, replied to shareholders who had criticized the board's dividend policy. He could not think of many companies which, over the past few years, had done as much or more in the way of scrip issues. One-for-one scrip issues had been made in 1953 and 1955 and at the same time the company had paid a "niggardly" dividend equivalent to what was now 36 per cent. on the old shares.

In view of heavy capital demands ahead, the board judged its policy to be the wisest and the time was not appropriate for another scrip issue. They were building completely new facilities and scrapping old ones. They were spending large sums of money, but they could not compete in the world today unless they did. Owing to Government restrictions they had had to make a very late start and were now trying to do in three or four years what they should have done over a period of 10 years.

Out of a total revenue in 1957 of £165,900,000, purchases took £99,600,000, wages, salaries, and employee benefits, £37,800,000, other expenses £9,100,000, and taxation, £8,300,000. The 9 per cent. dividend absorbed £2,000,000, and £9,000,000 was retained in the business.

JOHN LYSAGHT, LIMITED—Mr. Archibald F. Gadsby has been appointed a director.

Record Sales for ICI

Home market sales of Imperial Chemical Industries, Limited, for the last quarter of 1957 were at a slightly higher level than in the earlier quarters of the year, state the directors. The year ended, however, with a feeling of uncertainty about trading prospects for 1958.

In rising by 6.3 per cent. group sales reached a record £462,900,000. This increase was derived largely from the large capital sums spent since the war on extensions and the erection of new plant; expenditure on research alone last year amounted to some £8,500,000, and on development £5,000,000.

In the 10 years to the end of 1957, £305,000,000 was spent by the company on new fixed assets, and during the past year expenditure on the construction programme reached £50,600,000, group expenditure during that time being £67,700,000. Year-end commitments were some £37,600,000 (£41,400,000).

It is proposed to create 130,000,000 unclassified £1 shares. After the one-for-two scrip issue involving £72,177,205 there will be 99,759,612 unissued shares left. These will be made available to meet the maximum conversion requirements of 28,800,000 shares of the unsecured loan stock, and the requirements of the profit sharing scheme for several years. They will also provide a reasonable balance of unissued capital.

Prices of some imported materials fell during the year, but those of many home-produced materials continued to rise. Excluding non-ferrous metals—which fell substantially—the company's purchases of raw materials cost about £10,000,000 more than in 1956, of which £7,250,000 was due to increased volume. Although competition intensified, exports amounted to, at f.o.b. values, £76,600,000 (£73,100,000), mainly reflecting the larger supplies of sulphate of ammonia available for export.

The tonnage of non-ferrous metals exported was approximately 16 per cent. higher, but the value was less on account of the heavy fall in copper prices.

Group net income expanded from £26,356,605 to £28,807,218 and the ordinary dividend is raised from 10 per cent. to 12 per cent., the gross being equivalent to 5 per cent. on the total group funds at the year-end applicable to ordinary holders.

Union Viewpoint

"One has not witnessed any marked reduction in foundry accidents since the operation of the Iron and Steel Foundries Regulations 1953" states Mr. Jack Higham, general secretary, in his annual report of the National Union of Stove, Grate and General Metal Workers, with headquarters at Rotherham. He adds that "strains which account for at least 20 per cent of foundry accidents are still happening on an ever-increasing scale." He refers to employers who continue to use out-of-date methods and says that "such methods are no encouragement to induce young men into British foundries." He continues "health and safety and a fair reward for a hard day's work must be guaranteed to British youth to-day if foundries are to be kept open." He does not consider that the Ministry has been very encouraging as far as health and safety are concerned, especially since in 1956 the Union was told that a further examination of preventive measures in foundries would be undertaken in the light of reports on two pilot surveys, but, he says, nothing further has been heard of the surveys.

South African Foundries*

Background to Twenty-one Years Development and Progress

As reported in a recent issue of the JOURNAL, *the South African branch of the Institute of British Foundrymen celebrated its 21st anniversary last February by a highly-successful exhibition and conference. The occasion merited a brief history of the genesis and development of the branch and such was accordingly appended to the* JOURNAL'S *original report. In what follows, the view of the last 21 years is expanded to take in a general picture of the South African foundry trade during that period, and the story is one of rapid progress and development. To this upward trend the critical war years when South Africa became the "workshop of the Middle East" gave fresh impetus, and to-day foundrymen can look back on a record of solid achievement during difficult times.*

In 1937 in South Africa, approximately 900 journeymen moulders and coremakers were employed by about 70 firms. Some of these concerns, however, operated more than one foundry, or type of foundry, so that there were probably between 78 and 80 foundries. It is estimated that there were about 3,000 Africans working in the foundries. Table 1 gives figures for pig-iron consumed by the foundries. In 1937, laboratory control was still in its infancy. The Union Steel Corporation and Dunswart Iron & Steel Works had good laboratories with trained men in charge, but most of the other foundries, while recognizing the need, had not yet organized themselves satisfactorily.

TABLE 1.—*Consumption of Foundry Pig-Iron in Foundries in the Union of South Africa.*

Year.	S.A. basic pig-iron used in casting.	Foundry pig-iron.		Total.
		Imported.	South Africa	
	Tons.	Tons.	Tons.	Tons.
1936	4,000 (Est.)	—	17,400	21,400
1937	6,000 (Est.)	—	20,100	26,100
1939	5,000 (Est.)	—	24,900	29,000
1945	9,670	—	72,700	82,370
1957	32,588	14,200	157,794	204,532

With the blowing-in of the reconditioned blast furnace at Newcastle by African Metals Corporation in 1938, foundry pig-iron was no longer produced by the South African Iron & Steel Industrial Corporation as a side-line but by a special producer who gradually became the most important supplier to the foundry industry. Newcastle was also in a better position to extend the number of different grades for special purposes and could manufacture ferro-manganese.

A malleable foundry was started soon after and plans were prepared in great detail for the establishment of a large engineering works on the lines later followed by the Van der Bijl Engineering Company. This was considered essential to meet the needs of war, should the occasion arise, but unfortunately nothing came of the venture at the time. When war did come, South African industry acquitted itself as the "workshop of the middle east" in a way which gained the admiration of the world—the foundry industry produced all the castings for shells, bombs, grenades, land mines and depth charges—approximately 20,000,000 tons during 1940-44. Nearly 6,000 armoured vehicles were built and equipped with spare parts. There were innumerable castings for trench mortars and howitzers, etc.

The increased demand for ferro-alloys had to be met from local sources and for this reason the African Metals Corporation, in 1942, started production at Vereeniging of ferro-silicon, ferro-manganese and ferro-chrome, and this event marked another important step in meeting the raw-material requirements of the South African foundry industry from local sources. The achievements of the S.A. foundries in the war years can also be judged from the fact that pig-iron and ferro-alloy production had risen from 304,500 tons in 1937 to 330,900 tons in 1939 and 612,500 tons in 1945.

Post-war Developments

The Van der Byl Corporation foundry was established just after the war, and with its attached machine shop can handle cast-iron castings up to 25 tons. A steel winder drum with a finished weight of 25 tons has been cast by the Union Steel Corporation. At Koedoespoort, near Pretoria, the South African Railways have recently invested about £100,000 for pattern-making machine-tool equipment for a proper metal-pattern shop and similar equipment will be established at the new iron foundry in Bloemfontein.

Although it is difficult to give an up-to-date accurate statistical report of the foundry industry alone, the growth is broadly indicated in Table 1, where it is seen that foundries consumed 204,582 tons of pig-iron in 1957 or almost eight times as much as in 1937. Accurate scrap figures are not available. The average production of steel castings for sale during the years 1952-56 was 60,351 tons per annum (Table 2), but in 1957 the production increased considerably to 65,800 tons. No figures are available for the non-ferrous production.

Pig-iron and ferro-alloy production was 1,496,000 in 1956 and 1,648,400 tons in 1957. Ferro-alloy sales in 1957 amounted to 29,690 tons, consisting of 19,553 tons Fe-Mn, 1,354 tons Fe-Cr, and

* Extracted from a paper presented to the 21st anniversary conference of the South African branch of the Institute of British Foundrymen, entitled "The Foundry Industry in South Africa," by Dr. H. J. van Eck.

South African Foundries

8,783 tons Fe-Si. In 1957 there were 178 foundry firms and some of these had more than one foundry. In addition there were three mining

TABLE 2.—*Tonnage of Steel Castings for Sale.*

1952	61,000 tons
1953	62,906 tons
1954	59,005 tons
1955	60,451 tons
1956	58,393 tons
Total	301,755 tons
Average	60,351 tons per annum
1957 (11 months)	60,327 tons
or estimated for whole year	65,800 tons

foundries, seven railway foundries, two sugar-industry foundries, one local authority foundry and one public transport foundry. The 178 firms operated the following 196 foundries: 113 grey iron, three white iron, three malleable iron, 20 steel and 57 non-ferrous.

The ferrous foundry firms employed in 1957 the following:—1,260 journeymen moulders and core-makers, 180 apprentices and 900 production moulders and coremakers, making a total of 2,340. In addition they employed 12,200 Africans. The non-ferrous foundries employed 210 journeymen apprentices and production men and about 1,700 Africans. In 1957 there were 150 patternmakers and 80 apprentices in the Transvaal. The estimate for the whole Union is 200 patternmakers and about 100 apprentices.

Towards the end of this year South Africa will be able to enter the export market for pig-iron at the rate of well over 100,000 tons per annum after satisfying all local requirements.

Scammells move the Mud

Two exceptionally large mobile mud-carrying tanks, the first of their type, are on their way to South America where Compania Shell de Venezuela, Limited, will use two Scammell constructors as tractors to haul these tanks between new oilwell drilling sites. The job of these outfits at the sites is to pump the "mud" or drilling fluid down the drill pipe through the bit when drilling is taking place. The "mud" keeps the bit cool and returns the cuttings up to the surface around the outside of the drill pipe.

Costing about £7,000, each of these mud tanks is 27-ft. long, 6-ft. dia., and has a capacity of 4,500 imperial gallons. Filling is by vacuum and discharge by compressed air, the air being supplied from a reciprocating compressor coupled to a diesel engine. The tank (manufactured by Bristowes Machinery, Limited, of London) and the compressor and auxiliary diesel engine, are carried on a massive Dyson semi-trailer. To facilitate coupling and uncoupling to and from the prime mover, the semi-trailer is equipped with extra-heavy-duty hydraulic landing gear capable of supporting and raising the front end even when fully laden. Internal expanding brakes fitted to all the wheels are actuated by a two-line air-pressure system from the constructor.

JAMES BOOTH & COMPANY, LIMITED—Mr. D. E. Bunce, secretary, Mr. C. Meredith, general sales manager, and Mr. C. Smith, works superintendent, have been appointed special directors.

The "Sincere" Founder

What the word *sincere* has to do with the art of the founder, this article will try to show. The Greeks and Romans developed great skill in making hollow castings of figures and busts in bronze using what is now called the *cire perdue* (or lost wax) process. First a core of clay was built up and roughly modelled into the shape of the figure to be cast.

Then on this a skin of wax was laid and, after hardening, it was worked up by the artist or sculptor, using fine modelling tools, into the exact representation of the figure to be cast in bronze.

A finely ground mixture of pounded brick, ashes and clay was mixed with water into a paste or rather a slurry and successive coats of this were painted on to the model in wax, each coat being allowed to dry before the next was added. In this way an intimate skin of the composition was laid over the wax and this pressed closely into every hollow and line of the wax beneath.

Next, soft clay was plastered carefully over this shape up to a good thickness and iron hoops put round this shapeless mass to keep it in position as it dried. To keep the mould in register, thin rods of bronze were driven in through the outer covering of clay, the wax effigy and into the inner core.

Baking and Pouring

After thorough drying, the whole was then placed in a hot oven so that the clay of the core and of the outer "mantle" was baked hard. The wax melted and was lost during this process and it ran out of small holes left in the mould for the purpose. In this way a hollow space was left between the outer and inner layers of clay which corresponded exactly with the outer and inner surfaces of the wax model. The mould was then ready for the casting and the molten bronze poured in.

The whole was then allowed to cool slowly, and afterwards the outer covering broken away and the inner core raked out through the base of the bust or, in the case of a figure, through a hole in the foot or in some other inconspicuous place. The thin bronze registering-rods were cut off and the surface of the statue cleaned and polished.

The more skilful sculptor and founder (usually one and the same person) had little left to do in this final touching up, but, as in all castings, small defects sometimes occurred. The purists would in that event melt the statue down and begin again but those less scrupulous "corrected" the errors in the hollows with a little wax coloured to imitate bronze and this, when hard, was difficult to detect unless the heat of the sun or from the hypocaust in the house revealed the deception. Thus the honest piece of sculpture would be described by the Romans as *sine cera*—"without wax." Hence the use and meaning of the word sincere to-day.*

* Another explanation of "sincere" is that when a letter was not closed with sealing wax it was an open statement, and that signing "yours sincerely" meant that the sender had nothing to hide or was open in his statements.—EDITOR.

American Letter

Auto Imports

Foreign car sales in the US originally anticipated at 300,000 units, or approximately 5 per cent. of a 6,000,000 car market, have fallen about 20 per cent. under this estimate for the period ending February 28 but, with the greater recession in sales of US cars, the actual percentage of the market is approximately 6 per cent. Out of about 700,000 units sold, approximately 40,000 were imported.

Malleable Founders' Conference

The Malleable Founders' Society's ninth Market Development Conference was held on April 9 and 10 at the Edgewater Beach Hotel, Chicago. The main topics of discussion were; "Creative Selling," "Machining," and "How Our Customers See Us." In the morning session on April 9, Mr. George T. Boli, president, Northern Malleable Iron Company, discussed "Creative Selling for the Small Foundry," and Mr. J. H. Smith, general manager, Central Foundry Division, General Motors Corporation, presented aspects of "Creative Selling—for the Large Foundry."

Among other papers of interest was that presented by Mr. L. R. Jenkins of Wagner Malleable Iron Company—"Elevated Temperature Behaviour of Malleable." Mr. W. C. Truckenmiller, Albion Malleable Iron Company went into new data developed by the Society's research programme on "Malleable Machining Characteristics." Mr. G. J. Kramer, Central Foundry Division, General Motors Corporation, spoke on the "Sales Value of Machining Data."

Current Economics

Business and industry in the US now are marking time at the lowest ebb of the current recession. Steel production is operating at 48 per cent. of capacity and the copper inventory is the highest in 10 years with output exceeding shipments. Recovery measures are moving into action by way of lowered Federal Reserve Bank discount rates which encourage the use of investment funds at lowered rates of interest.

Dinner

ASSOCIATION OF BRONZE & BRASS FOUNDERS

Some 90 members and guests attended the theatre party supper arranged by the Association of Bronze & Brass Founders, on Tuesday, April 29, at the Savoy Hotel, London. Seated on the top table were Mr. P. B. Higgins, Vice Admiral M. H. A. Kelsey, Mr. Noel Newman, Mr. F. G. Burrell, Mr. W. S. Lawson, Mr. F. Baugh and Mr. G. L. Hancock, each of whom were accompanied by their ladies. Prior to the supper party, a visit had been made to the Savoy Theatre, where members and their guests enjoyed the musical "Free as Air."

Bell Furnaces. In publication BF/58, G.W.B. Furnaces, Limited, P.O. Box 4, Dibdale Works, Dudley, describe and illustrate a wide range of electrically-heated bell furnaces, in which trailing cables are eliminated by the use of electrical contacts incorporated at the base of the cover. Though the installations illustrated are for treating steel sheets and wire, they are obviously of interest to malleable iron-founders.

Modern Bath Foundries Officially Opened

Two bath foundries—one entirely new, the other totally re-modelled—were officially opened on Tuesday, April 29. They were the new works of Bilston Foundries, Limited, a full account of which appears in this issue of the JOURNAL, page 511, and the Greenford, London, works of British Bath Company, Limited, which has now been completely re-organized and modernized. A full account of the latter will be published next week.

At the opening of the new bath foundry of Bilston Foundries, Limited, at Batman's Hill, Bilston, Press delegations from London and the Midlands were welcomed by the chairman and managing director of the company, Mr. T. I. Hobart, at a lunchtime reception. Parties of visitors had toured the old Bilston bath foundry earlier in the morning and in the afternoon they were conducted over its modern, mechanized counterpart. The new £750,000 works was, in Mr. Hobart's words, "working in slow motion"; the current pilot scheme is soon to give way to full production which has been scheduled to reach a total of one bath per minute. After an extensive tour of the foundry visitors were entertained to tea by the management and most of them accepted the invitation to use the occasion as an informal question time.

At the British Bath Company, Limited, Greenford, Middlesex (a member of the Allied Ironfounders Group), Mr. G. R. Webster, a director, welcomed the guests, who were then split up into small parties and conducted around the various departments by members of the company's staff. Of particular interest was the new hot-blast cupola, the American moulding machines, and the sand-treatment plant by Augusts, Limited. A very interesting visit was concluded with luncheon at the Orchard Hotel, Ruislip, at the invitation of the company.

Brush Group Company to Stop Making Diesels

Diesel engine production is to stop later this year at the Leeds factory of J. & H. McLaren, Limited (a member of the Brush Group, Limited), making between 500 and 600 workpeople redundant out of a total of 786. German competition is blamed. As a remedy it is proposed to expand production of welded steel fabrications, which at the moment employs about 100 people, and for the company to do some of the work of the Brush Electrical Engineering Company.

Mr. Ian T. Morrow, managing director of the Brush Group, told workers of the decision on April 21. He said that the group last year "had to subsidize McLarens to the tune of several hundred thousand pounds in the past four years," and because the group had far too much capacity for diesel-engine production that side of the business would be transferred to other factories in the group.

Three Brochures

The United Steel Companies, Limited, 17, Westbourne Road, Sheffield, 10, have issued three brochures covering "Training for Student Apprentices"; "Careers in Research and Development"; and "Careers for Graduates." They are uniform in presentation and, without pictorial or other embellishments, state exactly what the companies offer to youths having the necessary preliminary training who enter the iron and steel industry.

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Company News

LE GRAND, SUTCLIFF & GELL, LIMITED, well drillers, oil-field equipment manufacturers, etc., of Southall (Middx)—No dividend is recommended for the period of 15 months ended December 31, 1957 (7½ per cent. for previous year). Net profit stands at £64,400, against £15,054 for the previous year, after tax of £61,656 (£37,895).

LILLESHALL COMPANY, LIMITED, structural engineers, etc., of St. Georges, near Oakengates (Salop)—Group trading profit for 1957 was £306,807 (£266,381). Net profit stands at £118,774 (£102,104) after depreciation of £32,796 (£29,608), and tax of £139,985 (£116,872). Final dividend is 10 per cent. (same) and the bonus 2½ per cent. (nil), making 17½ (15) per cent.

HOPKINSONS, LIMITED, engineers and bronze, iron, and steel founders, of Huddersfield—A 22½ per cent. final, compared with 20 per cent., makes 32½ per cent. for the year ended January 31, 1958, against 30 per cent. The group net profit of £526,216 compares with £422,845, after tax of £495,150 (£445,000). There is £493,454 (£420,822) attributable to the holding company.

WORTHINGTON-SIMPSON, LIMITED, hydraulic and general engineers, of Newark (Notts)—The company is raising its final dividend from 15 per cent. to 20 per cent. for 1957, making 30 per cent., against 25 per cent. on the £936,000 ordinary. The net profit is up from £478,700 to £493,095 after a heavier tax of £536,950 (£487,000). CIC consent has been received to a proposed one-for-one free scrip issue.

CAMMELL LAIRD & COMPANY, LIMITED—An 11 per cent. final dividend, compared with 10 per cent., makes 15 per cent. for 1957 on the £5,325,000 capital, against 14 per cent. Group profits rose by £335,970 to £2,203,439, before tax of £1,111,644 (£1,007,738). Provision has been made from capital reserve for depreciation in market value of quoted securities of £107,026 (£139,364), and profit brought in on sale of securities, £40,787 (£1,947).

CROFTS ENGINEERS (HOLDINGS), LIMITED, power transmission engineers, of Thornbury, Bradford—The order-book was lower at the end of 1957 than at the beginning of the year, states Sir Arthur Croft, chairman. This was mainly due to constantly increasing outputs arising from extensions to buildings and plant. Sir Arthur also reports that each company increased its turnover, and the sales department confidently expecting to expand group trade. Overseas trade was being extensively developed.

VICKERS, LIMITED—The 7½ per cent. final announced on the ordinary stock makes 10 per cent. for 1957. The figures apply to the £41,000,000 ordinary; the 11,772,756 ordinary £1 shares issued last October did not rank for the interim. In 1956 there was a similar 10 per cent. total on the £29,227,244 ordinary then in issue. Expansion from £12,701,167 to £13,515,932 in group profits is also reported. Tax accounted for £7,131,468—including some £624,000 for overseas tax—compared with £6,521,045.

ASQUITH MACHINE TOOL CORPORATION, LIMITED—The company announces that of the 1,340,000 5s. ordinary shares offered to ordinary shareholders in the proportion of one new share for every two shares held, acceptances have been received on provisional letters of allotment to the extent of approximately 97½ per cent. Applicants for up to 25 excess shares received allotment in full; applicants for over 25 received a basic allotment of 25 shares plus about 6 per cent. of the amount by which the application exceeded that figure.

Law Cases

Employers must warn of Hazards

The consequences of putting wet slag into a hot slag pot formed the basis of a claim heard at Rotherham County Court, when a crane driver, Mr. Derek Finch (26), sued the Steel, Peech & Tozer branch of the United Steel Companies, Limited, for alleged negligence. Mr. Finch was injured in an explosion when he put wet slag into a hot slag pot in the company's Templeborough melting shop last July.

For the plaintiff, Mr. H. C. Pears said that, had Mr. Finch known what would happen, "it would have been virtual suicide for him, sitting right above in a cabin, to drop something like a bomb below."

Awarding the plaintiff £50 with agreed damages of £8 17s. and costs, Judge Ernest Ould said that as the driver of a 15-ton crane, Mr. Finch picked up skips of slag and took them to places where they could be safely deposited. Last July, because there was no one about to hook the skip up again, he did not empty it into the hopper, but discharged it into a slag pot. There was an explosion, which not only concussed Finch 90 ft. above, but killed one man and injured six others.

"I would have thought," said the judge, "that anybody who had the slightest knowledge of the working of a melting shop would have known that if you bring wet material into touch with hot material such as hot metal or slag there is every likelihood of producing an explosion." Mr. Finch had said he had not been told and was not aware of this danger.

It was difficult, but just possible to accept that as being the truth, and it was the employers' duty to instruct men about this hazard and any other danger they might encounter. There was evidence that it had been the practice, perhaps in breach of rule, for people to deposit slag in slag pots when it suited their convenience.

Mr. Finch had established a case that his employers did not do that which, in the circumstances, careful employers should have done for his safety and that their failing to do so had resulted in the accident.

Fellow Employee blamed

Claiming that he had virtually lost the sight of his left eye, Mr. Clifford Bray (45) successfully sued Easterbrook, Allcard & Company, Limited, manufacturers of engineers' small tools, of Sheffield, at Sheffield Assizes. Awarding the plaintiff £2,500 damages, Mr. Justice Byrne said that he had to decide if a ball-race on a machine was removed with a gentle tap or with a tap not so gentle, and he ruled that the tap had to be not so gentle.

The action was begun at Sheffield in 1956, but was adjourned for further expert evidence. The case for Mr. Bray was that he was adjusting a fluting machine when, as a result of operations on an adjacent machine, where another employee was trying to remove the outer casing of a ball-race, a flying chip of metal struck him in his eye. He alleged negligence on the part of the fellow workman.

A CENTRAL BUYING DEPARTMENT, located at the company's head office in London, has been established by the Northern Aluminium Company, Limited, to co-ordinate purchasing policies within the company and to negotiate for major items of equipment and bulk supplies of material. Mr. D. A. Corbett-Thompson, formerly export sales manager, has been appointed chief purchasing officer.

Publications Received

Production of Ni-Resist, available from the Mond Nickel Company, Limited, from Thames House, Millbank, London, S.W.1.

This publication is of great worth for the foundry industry as it is essentially practical and full of hints. As is well known, Ni-Resist possesses such useful properties as corrosion-, growth-, wear- and erosion-resisting properties, as well as distinctive electrical properties, being non-magnetic. Two grades are currently manufactured—"standard" and "copper-free." The former carries 13 to 16 per cent. nickel and 6 to 8 per cent. copper, whilst the latter has 20 to 22 per cent. nickel and no copper. This one is preferred for the handling of caustic liquors and the like, whilst the standard grade has good heat-resisting properties up to 700 deg. C. The carbon content of these alloys should be limited to a maximum of 2.9 per cent. to ensure density and high strength, whilst for maximum machinability the chromium should be held at 1.5 per cent., at 3.0 per cent. it gives the best heat-resisting properties. A useful table is incorporated in the booklet correlating the carbon and silicon contents and section thickness. The pattern shrinkage allowance is of the order of $\frac{3}{16}$ in. per ft.

"Ironmaking made easy" can be ensured by the use of N.C.C. Pig, which contains the nickel, copper and chromium in such proportions that when it constitutes a quarter of the charge the correct composition is given. An even simpler method is merely to remelt Ni-Resist pig-iron. A useful series of tables is also included in the publication, giving specimen charges for these alloys and data covering cupola melting.

Under the heading of "Foundry Technique" much useful data are given as to shrinkage, heads, chaplets and denseners, and the elimination of barrelling is stressed.

Nickel and Its Alloys. Published as circular 592 by the National Bureau of Standards. Obtainable from the Superintendent of Documents, US Government Printing Office, Washington, 25, DC, USA; price 60 cents.

Ever since 1921, the (US) National Bureau of Standards has from time to time issued brochures covering nickel and its alloys. The current revision represents a review of literature up to 1956, includes some 1957 references and some to as yet unpublished information. The references are particularly interesting and list no fewer than 801 sources of documentation. It is comprehensive, covers all phases of the metallurgy of nickel and its alloys and takes the subject from the pure metal through to its alloys with ferrous and other non-ferrous metals. To gauge the many facets of this interesting subject, it may be mentioned that only about three pages are devoted to the nickel cast-irons out of a total of 78 and about half the book is devoted to the unalloyed metal.

Handsaws and Sawing, by A. W. Lewis. Published by Educational Productions, Limited, 17, Denbigh Street, London, S.W.1, in collaboration with Spear & Jackson, Limited, Sheffield; price 2s. 6d. net.

The use of the handsaw in patternshops is not too widespread to-day, but the few that are still employed are worth while keeping in proper condition. The objective of this 33-page book is to give practical instruction how to use a dozen different types of saws and to maintain them in good order. Included is a "do it yourself" item—the making of a coffee table. The amateur handyman will find this book of distinct worth.

New Catalogues

Precision Steel Castings. Samuel Osborn and Company, Limited, Clyde Steel Works, Sheffield, have issued as Publication No. 7, "SOcast Steel Castings." It would have been impossible to produce such a brochure before the war, and indeed for some time afterward, as the work described and illustrated is being carried out in a new and specially-designed foundry to include shell moulding, the Osborn-Shaw process, and CO_2 practice. This brochure has a number of valuable points to commend it. The colour-scheme is good, the choice and presentation better, and the inclusion of a map of the location of the Holbrook works excellent. Why the latter makes such an appeal is difficult to appraise, but it invariably happens that a sketch map in the popular Press showing the scene of a murder receives more attention than the scare headlines! The reviewer cannot support the statement that shell moulding "was regarded with some scepticism by experienced foundrymen" for initially a very large number made trials; some succeeded, some failed—which is the usual experience with any new process. As Osborn's experiments were with steel—a high-melting-point metal—they had a more difficult job than most and the results with this and other new processes have now had their culmination in the construction of a plant of pleasing appearance, equipped with really modern plant. Included in the catalogue are the specifications for about 25 different types of steels. It is an interesting and well-produced booklet.

Castings, etc. A catalogue received from S. Russell & Sons, Limited, Bath Lane, Leicester, gives what is in the main an annotated pictorial review of the activities of this firm which could be best described as "founders and engineers." The company was founded in 1864 when Samuel Russell started up a brass foundry in the town. It soon expanded to include iron founding. By 1890 a mechanical engineering division was formed to meet the demand for machined castings and later a structural engineering division was created. Each section of the works is dealt with separately by illustrating the shops of the department and a few typical products, such as a sawing machine, three castings, and buildings completed by the structural division.

The catalogue runs to 24 pages and good use has been made of colour printing. It is a dignified publication of real worth as becomes a firm approaching the century of its establishment.

Crucible Furnaces. The Monometer Manufacturing Company, Limited, Savoy House, 115-116, Strand, London, W.C.2, has issued an eight-page illustrated leaflet covering four different types of furnaces. They include a hydraulically-operated lip-pour tilting furnace; a central-axis crucible furnace and lift-out and bale-out furnaces. All these can be either gas or oil fired. Working data for melting times and fuel consumption related to the weight of charge are given. The pamphlet carries some excellent illustrations of plant installed.

Dust Extraction. A catalogue, No. 55, issued by Dallow Lambert & Company, Limited, Thurmaston, Leicester, covers a wide range of applications of plant for collecting dust. Double-ended floor-stand grinders are illustrated, showing a method of dust collection developed in association with the British Cast Iron Research Association system, on the one hand, to large plant serving the fettling department of a foundry. It is a well-presented brochure.

Iron Die-casting at Qualcast

Considerable interest for visitors to the foundries of Qualcast, Limited,* at Derby arises from the fact that this is the only concern in this country operating the Eaton process of iron die-casting. The illustrations reproduced here show two phases of the process:—(*a*) the production of iron dies for mounting on the casting machines and (*b*) a close-up of the actual pouring of one of the dies. The dies are mounted on a multiple spindle machine and open, close and index automatically. Of subsidiary interest in this second illustration is the tea-pot-spout type of ladle and the design of the hand-lever system used for tilting it. Only a small corner of the die-making shop is shown in the left-hand photograph, but in the foreground are shown a number of individual dies; on these the "pegs" moulded on the reverse of the die to assist cooling can clearly be seen. Batteries of milling and shaping machines are used to form the die cavities.

* Described briefly in the JOURNAL, April 10, 1958.

Further Cut in Output in International Nickel

Last week, the International Nickel Company of Canada, Limited, announced a further cut of about 10 per cent. in production. A similar cut was made just over a month ago, when a warning was given that another might be necessary. The present reduction takes effect from the beginning of this month and will reduce the company's output to about 250,000,000 lb. a year. Even at this rate stocks of nickel appear likely to continue to accumulate, as incoming orders are below that level, the company states.

Should the demand show a substantial increase, production at Copper Cliff can be increased with a minimum of delay and long-term plans for further increased capacity remain unchanged.

Inco has agreed to release the US Government from any obligation to purchase nickel for the first nine months of this year and recently renegotiated contracts with the General Services Administration agency of the US Government are for less quantities of metal.

KEIGHLEY (YORKSHIRE) FIRE BRIGADE was called on Friday, April 25, to a fire at the works of Jonas Wells, Limited, brassfounders, Greengate Works, Keighley. The fire was quickly put out and little damage was done.

ICI Awarded the Sir George Earle Trophy

"In recognition of the far-sighted policy of its board and its attitude towards the problems of industrial accident prevention and of the altruistic and generous way in which the extensive safety knowledge accumulated within its own organization has been made available continuously to industry throughout the world," is the citation which accompanies this year's award of the Sir George Earle trophy to Imperial Chemical Industries, Limited.

The trophy, which is a silver Georgian inkstand containing a vellum roll on which the names of the holders are recorded, was presented to the Royal Society for the Prevention of Accidents in 1956 by Sir George Earle, chairman of Associated Portland Cement Manufacturers, Limited, for an outstanding achievement in the cause of industrial accident prevention by an industrial or other organization.

The trophy, together with a commemorative plaque, will be presented by the president of the society, Sir Howard Roberts, at the National Industrial Safety Conference at Scarborough this month.

Mr. E. E. BURCHELL, managing director of the East Sussex Engineering Company, Limited, Lewes, Sussex, founders and constructional steelworkers, has been appointed chairman and managing director of the company. Mr. Burchell was executive director when the company was formed in January, 1951.

Tin in Cast Iron

Views Modified to Account for UK Conditions

From the annual report of the Tin Research Institute, the following extract has been culled dealing with views (of American origin) on the addition of tin to cast iron:—

"In wear-resisting irons it is desirable that the matrix should consist wholly of pearlite. This can be achieved by close control of composition or by the addition of alloying elements such as chromium. However, the production by these methods of a completely pearlitic matrix is accompanied by the risk of forming free cementite which is detrimental to the machining properties. It has been known for a number of years that tin promotes pearlite in cast iron. Recently it has been reported that small additions of tin prevent ferrite formation during the casting of iron but involve no risk of promoting massive cementite when amounts in excess of that required to give a pearlitic matrix are added.

"The Tin Research Council has sponsored work on this subject at the Battelle Memorial Institute in order to confirm the earlier work on structure and to examine the effects of tin on the mechanical properties of cast iron. The results of this work, which show that the small amounts of tin required to bring about the structural changes are not detrimental to the mechanical properties, were presented at the 1957 annual meeting of the American Foundrymen's Society in Cincinnati.

"Since the publication of these results, trials have been undertaken by commercial firms in the United States and improvements in structure have been confirmed."

UK Statement

Feeling that the above did not fully accord with opinions held in this country, enquiries were instituted by the Editorial department of the JOURNAL with a view to clarifying the position. The result has been the compilation of the following statement as reflecting the UK position and amplifying the earlier report:—

To develop high strength and maximum wear-resistance in grey cast iron it is desirable in some cases that the metallic matrix should be completely pearlitic. The formation of pearlite is encouraged by the presence of the so-called carbide-stabilizing elements which, unfortunately, also easily tend to promote the chilling tendency of grey cast iron. There is a limit, for instance, to the extent to which chromium may be added to grey cast iron for the purpose of producing a pearlitic matrix, since chromium markedly increases the likelihood of chill. On several occasions recently it has been suggested that pearlitic grey cast irons could be obtained more easily by the appropriate use of tin, which, whilst promoting the formation of pearlite, may not affect the chilling tendency, and it is useful to examine this suggestion purely from the point of view of the British manufacturer.

It has been known for some time that tin helps to stabilize pearlite; in fact, in the production of blackheart malleable iron tin is recognized as a harmful element. This was described, for instance, by S. W. Palmer (Paper No. 876, *Proceedings* of the Institute of British Foundrymen, **40**, 1946-47) and Morrogh (BCIRA *Journal of Research and Development*, April, 1952 and *Trans.* of the American Foundrymen's Society, 1952, **60**, 439-452) who showed that tin promoted the formation of pearlite in nodular cast irons.

More recently, tin has been suggested as a deliberate alloying element to suppress ferrite formation and to promote pearlite (see De Sy and Foulon, *La Fonderie Belge*, 1954, December; p. 187-199). Still more recently, the matter has been studied in America (Davis, Krause and Lownie, *Modern Castings*, May 1957, p. 96-98). The Belgian and the American investigators demonstrated the pearlite-promoting effect of tin, but the American investigators found a tendency for shock resistance to decrease in large sections with contents beyond about 0.1 per cent.

The Belgian investigators used Swedish charcoal iron for their experiments. This material is very free from pearlite-promoting residual elements such as arsenic, tin, chromium, etc. However, many British pig-irons and cast irons already contain significant proportions of these elements and the conclusions of these workers are not therefore necessarily applicable to British materials. In this country, experience suggests that whereas the pearlite promoting effect is readily discernible with irons of low residual-element content such as those of Swedish origin, it is less pronounced in British materials.

The American investigators referred to earlier appear to recommend additions of tin in amounts up to about 0.1 per cent., but tin is frequently found in many British foundry pig-irons in amounts as high as 0.1 per cent. and sometimes in amounts greater than this. In view of these facts it is suggested that additions of tin to promote pearlite formation should be used with great circumspection. Tin in amounts up to 0.1 per cent. may be added when the residual-element content of the base iron is already very low. However, further additions of tin to many British foundry pig-irons could have a harmful influence on account of their already high tin-content.

INTERNATIONAL HARVESTER COMPANY OF GREAT BRITAIN, LIMITED, Idle, Bradford, announced that 50 employees were to be dismissed as from last Friday, because of a falling-off in demand in the export market. It is stated that the men are from various manufacturing departments and will be given first chance of any jobs when rehiring begins. The majority of the men to be dismissed are unskilled.

Personal

Mr. G. M. NEWTON has been elected to the board of the British Vacuum Cleaner and Engineering Company, Limited.

Mr. G. J. DODGSON, secretary of A. Reyrolle & Company, Limited, manufacturing electrical engineers, of Hebburn (Co. Durham), is to retire after many years' service with the company.

Mr. GEORGE EDWARDS is 92, but he refuses to retire from his Birmingham business. He is managing director of Edwards Bros. (Birmingham), Limited, a family concern of brassfounders and electrical engineers.

Mr. MAX R. LIDDIATT, chief metallurgist of W. G. Allen & Sons (Tipton), Limited, mechanical engineers, is the new chairman of the Wolverhampton branch of the Institute of Welding. Mr. Liddiatt is a Fellow of the Institution of Metallurgists.

The EARL OF VERULAM has been elected chairman designate of the British Institute of Management. At the annual meeting of the Institute, to be held on July 23, Lord Verulam will succeed Mr. HAROLD WILMOT, who retires as chairman at the end of his two years of office.

Mr. J. M. L. HOWELL, sales manager of the earth-moving machinery department for the Distington Engineering Company, Limited (a subsidiary of United Steel Companies, Limited), Workington (Cumberland), has been appointed, in addition, sales manager of the mining department.

Mr. CHARLES M. VIGNOLES, managing director of Shell-Mex & B.P., Limited, has been elected president of the Institute of Petroleum for 1958-59. Mr. Vignoles joined the Shell group of oil companies in 1924, joined the board at the end of 1950, and was elected managing director the following year.

Mr. W. ROBSON, managing director of Marston Excelsior, Limited, was among those who were honoured for long service to Imperial Chemical Industries, Limited, metals division, in Wolverhampton on April 18. Sir Ewart Smith, deputy chairman of ICI presented the awards at a dinner.

William Jessop & Sons, Limited, steelmakers, of Sheffield, and its associated company J. J. Saville & Company, Limited, have appointed Mr. D. MILNE as secretary of the companies, with Mr. J. V. GREGORY as assistant secretary. The appointments have been made following the death of Mr. F. Briggs.

Mr. HENRY C. ROBB, a grandson of the founder of Henry Robb, Limited, engineers and shipbuilders, of Leith, Edinburgh, has been appointed a director. Mr. Robb was a member of a team of engineers and scientists at Harwell, for two years, concerned with the study of the application of nuclear energy for the propulsion of merchant ships.

Mr. A. E. MORTON has been appointed home sales manager and publicity manager of Mathew Bros., Limited, manufacturers of mechanical handling and earth-moving equipment, of Wallington (Surrey). He was previously publicity manager and sales manager of the compressor division of MacKay Industrial Equipment, Limited, Feltham (Middx).

Mr. JOSEPH RICHARDS has been appointed deputy chairman of the Wombwell Foundry and Engineering Company, Limited, Wombwell, South Yorkshire. Mr. EDWARD ROBINSON, works engineer, has been appointed chief engineer and assistant to the managing director. Mr. JOHN FISHER has been appointed works manager and will be suceeded as chief draughtsman by Mr. D. LINDLEY.

Mr. G. COLLIN HEPWORTH, chairman and joint managing director of Hepworth and Grandage, Limited, engineers, Bradford, accompanied by Mr. H. Forrest (foundry director). Mr. A. H. Phipps (joint production methods engineer), and Mr. K. McMahon (production manager) left last week for a visit to the United States, where they are to study the latest production methods.

Mr. H. B. DAUNCEY, a director of T. H. and J. Daniels, Limited, of Stroud, was guest of honour at a dinner party held to mark his completion of 50 years with that firm where he started as an apprentice in 1908. Fellow directors attended and Mr. F. W. Daniels, chairman of the company, presented him with a silver tea service on behalf of the executive directors. He also received a cheque from Mrs. F. L. Daniels.

Mr. B. L. PERKINS has been appointed manager of the eastern area office of Lancashire Dynamo Group Sales, Limited, with a fully qualified engineering staff. Mr. Perkins, who commenced his engineering career with Lancashire Dynamo & Crypto, Limited, in 1928, relinquished his position as general sales manager of Foster Transformers, Limited (a member of the group), at the end of last year in order to take up his new appointment.

Mr. ROBERT CARR, MP, who, as announced recently, resigned his post as Parliamentary Secretary to the Ministry of Labour and National Service in order to return to industry, has accepted the unanimous invitation of the directors of John Dale, Limited, makers of non-ferrous collapsible tubes and light-alloy castings, of London, N.11, to become chairman of the parent company of the group. Mr. J. W. G. COLLINS, who joined the company in 1945 as works accountant, has been appointed assistant managing director. He is also a director, and secretary and treasurer of John Dale (Canada), Limited, and of Modern Containers, Limited, and chairman of John Dale (Bury), Limited.

Obituary

Mr. ALBERT APPLEBY, deputy labour manager for Rolls-Royce, Limited, works personnel in Derby, died suddenly on April 21. He was 58. In 1951 he was awarded the British Empire Medal, for his services as works convenor; he was appointed a magistrate in 1951.

The death has occurred at the age of 78 of Mr. JOHN HAMPTON PAWLEY, a director of George Cohen Sons & Company, Limited, engineers, and iron, metal, and machinery merchants, of London, W.6. Mr. Pawley, who had been with the firm for 51 years, was appointed to the board in 1956.

Mr. THOMAS PATERSON CARGILL, a former chairman of Anderston Foundry Company, Limited, Middlesbrough, has died at the age of 85. Mr. Cargill joined the firm in 1916 and became chairman 10 years later. He retired from the chairmanship in 1938, but retained his directorship up to the time of his death.

Mr. STANLEY WILLIAM COCKRAM, financial director of Aiton & Company, Limited, pipe engineers, of Derby, died on April 23 at the age of 68. He retired as secretary in 1952, but continued on the board, to which he was appointed in 1945. Mr. Cockram had been associated with the firm since 1904, which he joined at Willesden, London, and came with the firm when they moved to Derby.

Exhibition Briefs

Mechanical Handling Exhibition

The Mechanical Handling Exhibition which is to be held at Earls Court from May 7-17 will be open from 10 a.m. to 6 p.m. each day, excluding Sunday. Among the exhibitors whose stands will be of interest to foundrymen the following may be mentioned.

PATERSON HUGHES ENGINEERING COMPANY, LIMITED, of London, will be exhibiting at (*Stand* 95) their "Palletizer," which will incorporate fully-automatic operation.

A. SCHRADER'S SON, of Birmingham, will exhibit (*Stand* No. 349) a range of air cylinders, control valves for hand-, foot-, or solenoid-operation, air-ejection sets, air presses, and quick-acting couplers.

RANSOMES & RAPIER, LIMITED, of Waterside Works, Ipswich, will exhibit their range of "RapieR" machines for mechanical handling (*Stand No.* 56). This includes their new fast standard mobile crane and their fork-truck model.

C. H. JOHNSON (MACHINERY), LIMITED, of Adswood Road, Stockport, Cheshire, will exhibit (*Stand* 42) their new Johnson-Vilver industrial lifting platforms for handling goods, between one level and another, without involving extensive alterations to buildings.

MATERIALS HANDLING EQUIPMENT (GREAT BRITAIN) LIMITED, of Dover Street, London, W.1, will exhibit (*Stand* 116) in addition to a complete range of side-operating fork-lift carriers, of 1-ton to 5-tons capacity, a straddle carrier made by Valmet Oy, of Finland.

GEO. SALTER & COMPANY, LIMITED, of West Bromwich, will exhibit (*Stand* 348) crane weighers, platform weighing machines for industrial use, roller bearings, including "Ahlberg & Aetna American bearings, retaining rings and springs for a wide variety of purposes.

BRITISH ELECTRICAL REPAIRS LIMITED, of Manchester, are showing (*Stand* 252) a wide range of lifting tackle including chain slings produced to various material specifications. Many examples of the company's normal and specialized lifting tackle will be exhibited.

FISHER & LUDLOW, LIMITED, Bordesley Works, Birmingham 12, will be showing (*Stand* 72) their range of conveyors, including the new "Flexiroll" troughing idler system. Many other belt and chain conveyors pallets and work boxes will be on display and there will be frequent demonstrations during the exhibition.

MAVOR & COULSON, LIMITED, Bridgeton, Glasgow, will exhibit three sizes of a new driving gear for belt conveyors. These can be driven by any type of motor or engine. The silent V-ropes absorb the shock of any sudden heavy load, and the second speed reduction runs in oil. The drives, it is claimed, are self-contained and weatherproof.

NEWMAN INDUSTRIES, LIMITED, of Bristol (*Stand* 278), will exhibit a range of electric motors for the domestic field. The new design is aimed chiefly at providing a really economical source of power for domestic and office appliances, as well as being suitable for industrial use on small machine tools, flexible shaft equipment, pumps and other powered units.

E. BOYDELL & COMPANY, LIMITED, of Old Trafford, Manchester, will exhibit three diesel-powered hydraulically-operated loaders, each of an entirely different type. One of these will be the model 4-WL tractor shovel, on show for the first time. It is a heavy-duty machine designed to give crawler tractor performance with the manœuvrability of a rubber-tyred unit.

RILEY (IC) PRODUCTS, LIMITED, of Woburn Place, London (*Stand* 88), will exhibit with their associates International Combustion Products, Limited. Representative "Syntron" electric vibratory machines will be shown here, and these include the heavy-duty back-magnet feeders used for coal handling. Also on show will be bowl feeders which handle small component parts, delivering them one at a time at controlled speed.

S. SMITH & SONS (ENGLAND), LIMITED, of Witney, Oxon, are exhibiting a new industrial coupling. This is an electro-magnetic form of drive coupling, having, it is claimed, the resilience of its fluid flywheel counterpart, and the stability of a solid device. It is a constant torque unit, the torque being independent of speed, and has a safety feature permitting a certain amount of slip when necessary. No moving engaging components are involved.

CARTER GEARS, LIMITED, of Thornbury Road, Bradford 3 (*Stand* 356) will show for the first time at any exhibition a new sectional working model of the "A" type hydraulic variable speed gear. This model has been designed and constructed to show the working principle of the gear and to display effectively its special features. A working model, made almost entirely from perspex, of the "F" type hydraulic variable speed gear will also be shown.

THE YALE AND TOWNE MANUFACTURING COMPANY, of Wednesfield, Wolverhampton, Staffordshire, will be showing their new, portable lightweight hoist, weighing 33 lb. and having a capacity of half a ton. The hoist is new in design and makes use of alloy materials and Grade 8a load chain. For quick servicing it is fitted with easily detachable aluminium covers. For safety, the hoist has drop-forged steel hooks which are designed to open slowly, without breaking, in the event of severe overloading.

THE GEORGE COHEN 600 GROUP, LIMITED, of Hammersmith, London (*Stands* 75 *and* 134), will exhibit a Jones KL 10-10 "Fast Travel" mobile crane. (*Stand* 75), will be devoted to the range of cranes designed, manufactured and exported by the associates in the 600 Group of Companies, K. & L. Steelfounders and Engineers, Limited, of Letchworth, Hertfordshire. The products on the other stand will give an indication of the range of equipment supplied by the company's lifting and mechanical handling department.

BROOM & WADE, LIMITED, of High Wycombe, will exhibit (*Stand* 342) a range of pneumatic hoists with capacities from a half-ton to one ton fitted with link chain, roller chain and wire rope. A feature of this range will be the recently introduced "Aro-Broomwade" hoist, weighing 29 lb., measuring 10½-in. by 5-in. dia., lifting half a ton at approximately 25 ft. per minute. They will also have on show their air-operated winches, including a warping drum winch specially designed as a sediment hoist. Other exhibits include the "Aro-Broomwade" spring balancer of 5 lb. and 10 lb. capacity, drills and screwdriver-nut runner and examples of stationary air compressors.

News in Brief

D. NAPIER & SON, LIMITED, of Acton, London, are exhibiting at the Hanover Trade Fair (April 27-May 6, 1958) in hall 3 on stand 420.

THE MADRAS PORT TRUST has placed an order with the Hunslet Engine Company, Limited, Leeds, for four 274 h.p. 0-6-0 type diesel-hydraulic locomotives.

PLANS have been approved for works extensions covering more than 60,000 sq. ft. at Birtley (Co. Durham) for the Caterpillar Tractor Company, Limited, Coalville (Leics).

EDGAR ALLEN & COMPANY, LIMITED, steel manufacturers, Sheffield, announced last weekend that a four-day working week would operate in the foundry department until further notice. About 150 workers are affected.

AN ORDER worth $121,000 has been received from America for transfer function analysers by the Solartron Electronic Group, Limited, Thames Ditton (Surrey). The equipment is destined for work with guided missiles.

OWING to the shortage of foreign exchange, India has restricted imports of steel for the six months to the end of September, 1958. Imports will be allowed only for certain categories, including hoop box strappings, tinplate, and forgings.

THREE PIECES OF ANTIQUE CUTLERY from the permanent display in Sheffield City Museum are on show at the Brussels Exhibition. They are dessert knives, and are in the British Iron and Steel Federation's section on historical cutlery.

SEVEN HUNDRED WORKERS were paid off at the weekend at the Hallside Works, Cambuslang, of the Steel Company of Scotland, Limited, which has suspended production because of a decline in orders. A few weeks ago the company paid off 100 men.

ROBERT NEILL & COMPANY (SHEFFIELD), LIMITED, engineers, Sheffield, staged an exhibition of industrial electrical equipment at Sheffield Royal Victoria Hotel on Wednesday and Thursday, April 23 and 24. Twenty other firms set up stands for the exhibition.

FOR THE FIRST TIME for many years, the Tyne Dock Engineering Company, Limited, South Shields, was without a ship under repair recently. Some men were paid off, but an official of the company declined to state how many had been affected.

INSCRIBED GOLD WATCHES have been presented to six men, whose service at Thomas Smith & Sons (Rodley), Limited, totals 310 years. They include Mr. W. Jeffrey with 55 years' service, and Mr. H. Woodcock, 52 years' service, both of whom are still working full time.

SIXTEEN YOUNG EMPLOYEES of the Staveley Iron and Chemical Company, Limited, near Chesterfield, have left for a tour of foundries in Germany and France "to give them a chance to look at the opposition." The average age of the employees is about 20 and they will be away for 11 days.

THOMAS SMITH & SONS (RODLEY) LIMITED, makers of cranes and excavators, Rodley, Leeds, held a demonstration of their products at the works on April 22. It was the first for many years and was attended by representatives of contracting concerns, local authorities and the Ministry of Works.

THE AUSTRALIAN SUBSIDIARY of Geo. Salter & Company, Limited, the West Bromwich spring and springbalance makers, has changed its name from Whitelaw Springs Pty., Limited, to Geo Salter (Springs) Pty., Limited. The company's address—Grosvenor Street, Abbotsford, Melbourne, remains unchanged.

THE SHEFFIELD SOCIETY OF ENGINEERS AND METALLURGISTS saw a film by Firth-Vickers Stainless Steels, Limited, and another by the Shell Chemical Company, Limited, "The Rival Worlds," together with one on Princess Margaret's visit to East Africa, in the University's engineering lecture theatre on April 21.

STANTON IRONWORKS, LIMITED, near Nottingham, announced last Friday that 300 men have started to work a four-day week. Mr. J. E. King, the general manager, has stated that order books a few years ago were much ahead of production but the firm was now beginning to reach the post-war backlog of orders.

AN EXHIBITION was held at Hereford last week by Henry Wiggin & Company, Limited, nickel and nickel alloy manufacturers, of Birmingham, to show people what the company contributes to world industry and to the amenities of their everyday life. The exhibition was opened by the mayor of Hereford.

EIGHT HUNDRED WORKERS at the Royal Ordnance factory at Dalmuir stopped work on April 21 and took part in a protest march against the proposed taking-over of the factory by Babcock & Wilcox, Limited. The workers carried unanimously a resolution supporting the decision by the Scottish TUC that Dalmuir should stay a Government factory.

Mr. B. L. GOODLETT, managing director, Brush Company, Limited, Loughborough, welcomed 200 members and their wives to the annual tea and entertainment given to members of the Brush Retired Employees' Association on April 19. Wives were able to attend for the first time. Mr. W. J. Angus, the chairman, thanked Miss M. L. Gibbs, the firm's welfare officer, and Miss J. Hickling, secretary of the Association for their work. Mr. J. R. Hutchings spoke on behalf of members who have been presented with gold watches for completing 50 years' service.

TWENTY-FIVE MEN with a total of 888 years' service retired from the Brightside works of William Jessop & Sons, Limited, Sheffield, on April 25. Among them was 77-year-old Mr. Walter Kirk, with 63 years' service, who had never been late, and who started work at the age of 13 as a crucible steel-melting apprentice at eight shillings a week—his day starting at 5.30 a.m. and finishing at 6.0 p.m. Mr. George Derby, 73 years old, started as a moulder and teemer at 12 shillings for a 72-hour week and has kept the same job for 60 years. Seventy-three-year-old John William Tomlinson, a forgeman, had 61 years' service.

THE SHEFFIELD AND DISTRICT BRANCH of the Purchasing Officers' Association held its seventh annual luncheon at the Grand Hotel, Sheffield on April 23, when guests were welcomed by Mr. C. L. Spencer, chairman of the branch. They included Professor Howard T. Lewis, Professor of Marketing at Harvard University, United States, the Lord Mayor of Sheffield, Alderman A. Ballard, the Master Cutler, Sir Frederick Pickworth, and the Association president, Mr. H. C. Exell. Alderman Ballard, who responded to the toast of the city, paid tribute to Sheffield as being one of the largest producers of machine- and hand-tools in the world. He said he had seen striking evidence of planning, adaptation of modern conditions and continuous research. The Master Cutler, proposing the Association said, the most important qualification for the purchasing officer was integrity, because employers had to place a lot of trust on the honesty of the purchaser. Mr. Exell presented a cheque to 31-year-old Stanley Gregory, who won a branch competition with a thesis on sub-contracting.

A scale model, perfect in every detail, of the new steelworks being erected at Durgapur, India, by a group of British firms. It is one of the exhibits in the Steel Industry's stand at Brussels. The works embody the latest technical advances.

World sees Britain's revolutionary new steel techniques at Brussels exhibition

New steels—new uses—new ways of making it—these are what the world's steel experts will see at the British Steel Industry's stand

AT THE BRUSSELS EXHIBITION Britain's Steel Industry is on show to the world. The Steel stand in the British Industries pavilion has something to say not only to steel experts, but to everybody.

No one who visits it can be left in any doubt about the vitality and modernity of our Steel Industry, nor of the vision and enterprise of the men, *at all levels*, who keep it running.

Elaborate Models

It is a fascinating story that it tells, and it is told in a fascinating way. There are vivid colour photographs of skilled men at work; examples of advanced steel products and alloys; elaborate and ingenious models.

One model shows the great new steelworks being built at Durgapur in India by a group of British firms. Another shows the two stages in making castellated beams, a unique constructional principle which can be seen in use in the stand itself.

More steel – new uses

Britain's steel output has increased by over two-thirds since 1946, while fuel consumption per ton of steel has been reduced 15%. Visitors will be told of plans to increase capacity by a further 7 million tons in the next five years.

They will see some of our new high-performance special alloys; heat resistant and stainless steels for beating the 'heat barrier' in flight and for atomic power stations; vacuum-melted steels of exceptional purity.

What visitors *can't* see – though perhaps they may infer it – is the spirit that makes Britain's Steel Industry so confident and forward looking: the welding of brains and skill into a team in which everyone has a sense of 'belonging'; the mutual confidence between management and men; the satisfaction of doing a hard job supremely well. But the results are there for the world to see.

How British steel spans the world

There are exhibits showing British steel in use all over the world: models of the projected Forth Road Bridge and of the world's largest radio telescope, jet engines, surgical instruments, a diesel engine bogie cast all in one piece – all of British steel.

There are other countries that make more steel than Britain, but none that makes it better and no major producer that makes it so cheaply – and prices were reduced in March. The story of the great technical advances that make this claim possible is the theme of the British Steel Industry's stand at Brussels.

THE BRITISH IRON AND STEEL FEDERATION

Pig-iron and Steel Production

Statistical Summary of February Returns

The following particulars of pig-iron and steel produced in Great Britain are from statistics issued by the British Iron and Steel Federation. Table 1 summarizes activities during recent months. Table 2 gives production of steel ingots and castings in February. Table 3, weekly average production of finished steel in January. Table 4 gives the production of pig-iron and ferro-alloys in February, and furnaces in blast. (All figures are weekly averages in thousands of tons.)

TABLE 1.—*Iron and Steel Price Index and General Summary of Pig-iron and Steel Production.*

Period.	B.o.T. Price Index, 1938 = 100.			Iron-ore output.	Imptd. ore used.	Coke to blast-furnaces.	Pig-iron, ferro-alloys prod.	Scrap used in steel prod.	Steel (incl. alloy).			
	I. & S.	Coal.	Basic materials excl. fuel[1]						Imports.[2]	Prod. ingots, castings.	Delivrs. finished steel.	Stocks.[3]
1955	276	399	529	311	244	246	240	213	29	381	305	1,247
1956	295	454	542	312	272	264	253	216	27	397	318	1,444
1957—Oct.[4] ..	343	497	516	330	322	274	285	232	10	438	340	1,574
Nov. ..	342	511	508	317	319	273	282	229	16	429	359	1,492
Dec. ..	342	512	501	276	313	265	276	206	13	398	314	1,444
1958—Jan. ..	342	511	493	299	303	260	271	214	15	407	321	1,406
Feb. ..	342	510	490	295	313	260	273	226	13	427	—	1,363

TABLE 2.—*Weekly Average Production of Steel Ingots and Castings in February.* 1958

District.	Open-hearth.		Bessemer.	Electric.	All other.	Total		Total ingots and castings.
	Acid.	Basic.				Ingots.	Castings.	
Derbys, Leics., Notts., Northants and Essex ..	—	5.3	9.2 (basic)	2.7	0.1	15.7	1.6	17.3
Lancs. (excl. N.W. Coast), Denbigh, Flints. and Cheshire	1.6	38.0	—	2.7	0.5	41.3	1.5	42.8
Yorks. (excl. N.E. Coast and Sheffield)								
Lincs.	—	46.0	—	—	0.1	46.0	0.1	46.1
North-East Coast	0.6	87.7	—	1.5	0.4	88.1	2.1	90.2
Scotland	2.7	47.4	—	2.8	0.2	50.8	2.3	53.1
Staffs., Salop, Worcs. and Warwicks	—	20.1	—	1.4	0.8	20.5	1.8	22.3
S. Wales and Mon.	2.1	76.4	7.5 (basic)	1.2	0.2	86.8	0.6	87.4
Sheffield (incl. small tonnage in Manchester) ..	9.8	37.7	—	13.6	0.4	59.3	2.2	61.5
North-West Coast	0.1	1.0	5.1 (acid)	0.5	0.1	6.6	0.2	6.8
Total	16.9	359.6	21.8	26.4	2.8	415.1	12.4	427.5
January, 1958[4]	15.3	341.4	24.0	23.6	2.8	395.1	12.0	407.1
February, 1957	19.9	357.2	26.7	25.2	3.1	419.3	12.8	432.1

TABLE 3.—*Production of New Non-alloy and Alloy Finished Steel.*

Product.	1956.	1957.	1957.		1958.
			Jan.[4]	Dec.	Jan.[4]
Non-alloy steel:					
Ingots, blooms, Billets and slabs[5]	4.7	5.0	4.8	5.6	5.7
Heavy rails ..	9.7	11.2	9.9	12.2	10.4
Sleepers, etc. ..	1.8	2.1	2.4	2.5	1.9
Plates, 3 mm. and over	50.2	54.3	52.0	57.9	51.7
Other heavy prod.	50.3	53.0	54.3	49.3	53.8
Ferro-conc. bars ..	7.8	8.8	8.6	8.5	8.5
Wire rods ..	22.9	23.3	23.7	23.5	25.3
Arches, etc. ..	10.1	11.0	11.3	10.0	10.9
Other light sections	41.4	38.8	43.3	34.5	37.2
Bright steel bars ..	8.0	7.0	7.5	6.5	7.0
Hot-rolled strip ..	24.5	23.1	23.3	23.2	23.7
Cold-rolled strip ..	7.5	7.1	7.0	7.7	7.9
Sheets, incl. coated:					
(i) Hot rolled ..	15.0	13.0	14.8	13.0	12.7
(ii) Cold reduced	24.8	29.1	27.9	26.5	32.4
Tin- and terne-plate	15.9	18.8	19.4	13.8	15.1
Blackplate.. ..	1.3	1.0	1.2	0.8	1.1
Steel tubes, pipes..	20.2	22.1	21.7	27.4	18.7
Tube, pipe-fittings	0.5	0.5	0.5	0.4	0.4
Tyres, wheels, axles	4.6	5.1	5.0	4.9	5.4
Forgings (excl. drop forgings) ..	3.0	3.1	2.9	3.3	2.8
Steel castings ..	4.5	4.6	4.7	4.3	4.7
Tool and magnet steel	0.3	0.3	0.3	0.3	0.3
Total	335.0	342.3	346 5	336.1	337.6
Alloy steel	17.3	17.8	17.0	18.2	17.8
Total deliveries from U.K. prod.[6] ..	352.3	360.1	363.5	354.3	355.4
Add: Imported finished steel ..	19.5	9.6	8.4	12.3	12.1
Deduct: Intra-industry conversion[7] ..	55.2	48.1	50.5	54.0	48.1
Total new material ..	316.6	321.6	321.4	312.6	319.4

TABLE 4.—*Production of Pig-iron and Ferro-alloys during February.* 1958

District.	Furnaces in blast.	Hematite.	Basic.	Foundry.	Forge.	Ferro-alloys.	Total.
Derby, Leics., Notts., Northants and Essex	22	0.3	18.0	23.6	0.4	–	42.3
Lancs. (excl. N.W. Coast), Denbigh, Flints. and Cheshire ..	7	—	21.6	—	—	1.6	23.2
Yorks. (excl N.E. Coast and Sheffield)							
Lincs.	9	—	39.9	—	—	—	39.9
North-East Coast	21	4.5	60.5	—	—	1.4	66.4
Scotland ..	9	—	20.7	1.7	—	—	22.4
Staffs., Salop., Worcs. and Warwick ..	5	—	7.6	1.7	—	—	9.3
S. Wales and Mon.	11	4.4	42.9	—	—	—	47.3
Sheffield	2	—	3.6	—	—	—	3.6
North-West Coast	8	16.5	—	0.2	—	1.6	18.3
Total ..	94	25.7	214.8	27.2	0.4	4.6	272.7
January, 1958[4] ..	96	26.5	212.8	26.6	0.7	4.4	271.0
February, 1957 ..	98	32.2	206.7	24.9	0.5	3.3	267.6

[1] Used in non-food manufacturing industries.
[2] Weekly average of calendar month.
[3] Stocks, mainly ingots and semi-finished, at the end of the year and months shown.
[4] Five weeks all tables.
[5] Other than for conversion into any other form of finished steel listed.
[6] Includes finished steel produced in the U.K. from imported ingots and semi-finished steel.
[7] Material for conversion into other products also listed in this table.

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Raw Material Markets

Iron and Steel

Pig-iron production is well maintained and consumers have no difficulty in obtaining the grades of their choice. Reserves of pig-iron are higher than for some time, and many furnaces continue to find it necessary to add to stocks, demands being insufficient to absorb outputs. Impressive tonnages of basic steelmaking pig-iron are being produced; this grade constitutes about three quarters of the output of pig-iron from all home sources. The steelworks now using a larger percentage of pig-iron in their mixture are receiving adequate tonnages for consumption and stock requirements. Although some imported supplies are coming to hand in completion of old contracts, these are mostly being placed into stock.

All grades of foundry irons and hematite continue plentiful, consumers having no difficulty in covering for their immediate and forward requirements. Many producers find it increasingly difficult to dispose fully of outputs and are adding fo large existing stocks, involving considerable additional cost.

Only in the low-phosphorus pig-irons is demand approaching outputs. The engineering and speciality foundries continue to take up most supplies available for the production of high-duty castings, chiefly for the motor vehicle trade, which maintains a good demand, and the foundries catering for them are busy. Many other of these foundries have fairly good order-books, enabling them to obtain reasonably good outputs for other users of high-duty castings. An appreciable tonnage of hematite pig-iron is also being taken up by these foundries, which have no difficulty in obtaining their requirements in this grade, as well as in the refined irons.

Trading at the light and textile foundries continues moderate. Many of the jobbing foundries are steadily employed, but forward business is small. The call for light castings continues to be disappointing, although it is hoped that the reduction in purchase tax on domestic appliances will ultimately provide some increase in demand for castings. At present the light foundries are only partially employed and a much larger volume of work could be undertaken by them. There is little, if any, improvement in the call for builders' castings. High-phosphorus pig-iron, which is used by these foundries, is plentiful and easily obtainable.

The foundries have adequate supplies of scrap, the chief demand being for the better and heavier grades of cast-iron scrap. Foundry coke deliveries are satisfactory, and ganister, limestone, and firebricks can be obtained to requirements.

Demand for bars and sections continues moderate, and many of the re-rollers have insufficient work on hand to keep their mills fully employed. Forward buying is negligible and short-time working is necessary. Fairly good stocks of billets are on hand at the mills, these often being sufficient to undertake existing orders, so that there is little fresh business for steel semis.

Orders now being received are to replace depleted stocks in order to implement the work on hand, but there is little forward buying. Home steelworks could supply a much larger tonnage than is at present being called for.

There is little call for defectives and crops, present prices being considered much too high to be of interest to re-rollers.

Non-ferrous Metals

Copper has been fairly firm on both sides of the Atlantic. In the United States the custom smelter price was raised ¼ cent to 23¾ cents a pound on April 24. This was a prime factor in enabling the London price to recover from its weakness following the news that the Chilean Government had resumed negotiations to end the strike at Chuquicamata. The firmer undertone thus established subsequently reflected itself in higher prices on the announcement that the Chilean Government had definitely suspended its activities to mediate in the strike. The sustained—and somewhat surprising—strength of Wall Street was also a favourable factor; but the US producers' price remains unchanged at 25 cents a pound.

Demand from Europe remains steady and both cathodes and wire bars are commanding good premiums. Following the rise in the US custom smelter price the Belgians raised their price to the equivalent of 22½ cents a pound.

In general terms the news from the US continues disappointing, although the feeling is gaining ground that there will not be a further steep fall in copper price. The chief point under discussion is, perhaps, the proposal made by the Chilean Government to the United Nations Commission on International Commodity Trade that a scheme should be drawn up designed to prevent violent fluctuations in copper prices on the world market. Otherwise interest is being stretched to consider whether this proposed scheme will be discussed in London on May 8, when copper producers and consumers are holding a meeting. It is understood that a Chilean representative will be present.

Despite bullish influences, the tin market has been slow to respond. Stocks in the UK have dropped during the last two weeks by 467 tons and 475 tons, respectively, and at the end of last week stood at 17,680 tons. Moreover, Malayan production figures for the March quarter show that the first quarter's output is 20 per cent. down on the corresponding three-month period a year ago. It is now felt that the pipeline stocks are becoming exhausted and this, more than anything else, unless it was the firmness of the market in the East, pushed the cash price well clear of the support price and placed a premium on three months' metal. In the States there is increased activity, the price being over 94 cents a pound. Even so, there is no buying on any scale in the US, but tin consumption figures for January make good reading, and show a rise of 18 per cent. to 6,320 long tons and a decrease in stocks by 1,800 tons.

In lead and zinc rumours and recommendations are flying thick and fast concerning the final outcome of the deliberations of the US Tariff Commission. As far as can be ascertained, the commission is split, the three Republican members wanting tariffs on lead and zinc raised to their maximum, and the three Democrat members recommending smaller increases. In any event the President has the deciding vote. He has 60 days in which to make up his mind.

In lead, latest American statistics show that the production cutbacks have yet to make themselves felt. In Europe, however, the supply and demand position is balanced. If, therefore, it is true that barter negotiations are going to take place on any scale, the statistical position could become tighter rapidly. The US price remains at 12 cents a pound with trading activity modest.

Zinc is quietly steady in London and slow in the States, where the price is still 10 cents a pound. Production cutbacks in the US seem to be taking effect, but there is no impact on the market. The supply and demand situation in Europe appears to be in balance. The position could become much tighter if barter transactions are, in fact, being regulated.

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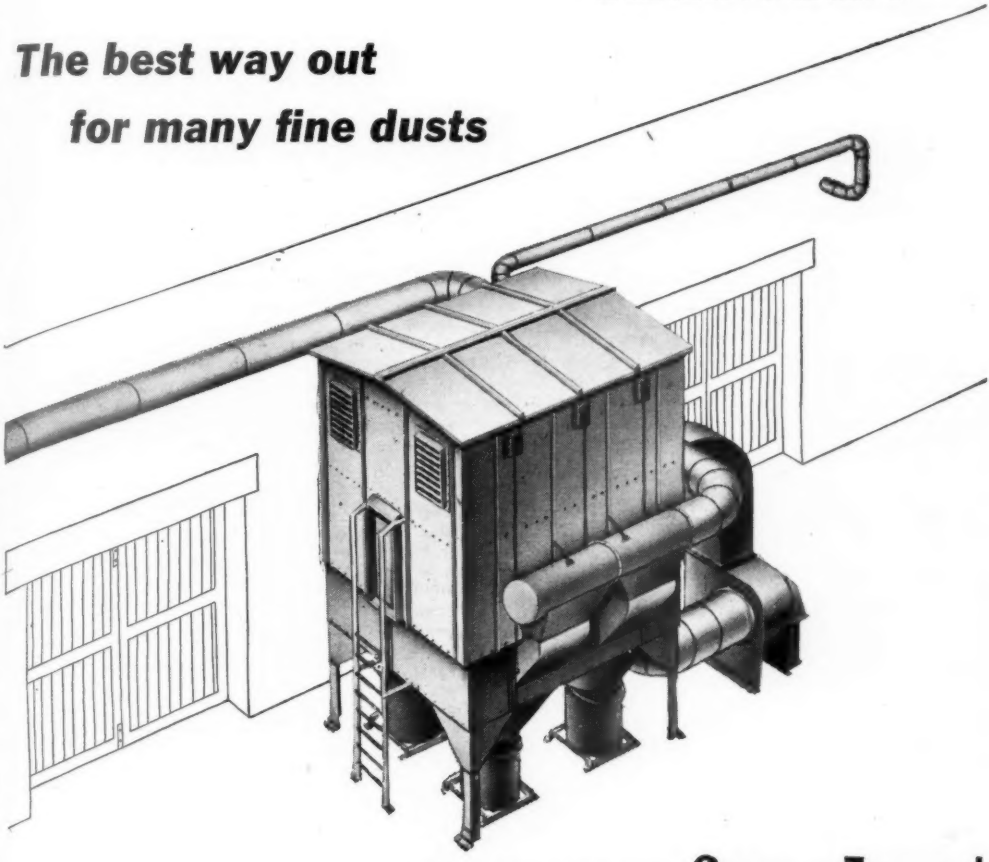

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CRC 71

Current Prices of Iron, Steel, and Non-ferrous Metals

(Delivered unless otherwise stated)

April 30, 1958

PIG-IRON

Foundry Iron.—No. 3 IRON, CLASS 2:—Middlesbrough, £21 6s. 0d.; Birmingham, £20 18s. 3d.

Low-phosphorus Iron.—Over 0.10 to 0.75 per cent. P, £23 17s. 0d., delivered Birmingham. Staffordshire blast-furnace low-phosphorus foundry iron (0.10 to 0.50 per cent. P, up to 3 per cent. Si), d/d within 60 miles of Stafford, £24 1s. 3d.

Scotch Iron.—No. 3 foundry, £25 3s. 6d., d/d Grangemouth.

Cylinder and Refined Irons.—North Zone, £25 19s. 0d.; South Zone, £26 1s. 6d.

Refined Malleable.—P, 0.10 per cent. max.—North Zone, £27 6s. 6d.; South Zone, £27 9s. 0d.

Hematite.—Si up to 2 per cent., S. & P. over 0.03 to 0.05 per cent.:—N.-E. of England (local iron), £25 6s. 6d.; Scotland (Scotch iron), Zone S.1, £25 13s. 0d.; Sheffield, £26 15s. 0d.; Birmingham, £27 4s. 0d.; Wales (Welsh iron), £25 6s. 6d.

Basic Pig-iron.—£20 3s. 0d., delivered Staffs, Derbyshire, Notts, Lincs, Rutland, Northants, and Leics.

FERRO-ALLOYS

(Per ton unless otherwise stated, delivered)

Ferro-silicon (6-ton lots and over).—45 per cent. Si, £47 10s. 0d. to £48 0s. 0d., scale 17s. 0d. per unit; 75 per cent. Si, £67 0s. 0d. to £67 10s. 0d., scale 17s. 0d. per unit.

Ferro-vanadium.—50/60 per cent., 22s. 6d. per lb. of V.

Ferro-molybdenum.—65/70 per cent., carbon-free, 12s. 6d. per lb. of Mo.

Ferro-titanium.—20/25 per cent., 2-3 per cent. Cu, £250 0s. 0d.; 38/40 per cent., commercially carbon-free, £287 0s. 0d.

Ferro-tungsten.—80/85 per cent., 7s. 11d. per lb. of W.

Tungsten Metal Powder.—98/99 per cent., 10s. 11d. per lb. of W.

Ferro-chrome (6-ton lots and over).—4/6 per cent. C, £91 10s. 0d., basis 60 per cent. Cr, scale 30s. 0d. to 30s. 6d., per unit; over 6 per cent. C, £87 10s. 0d., basis 60 per cent. Cr, scale 30s. 6d. per unit; 2 per cent. C,* 2s. 1d. to 1¼d. per lb. Cr; 1 per cent. C,* 2s. 1¼d. per lb. Cr; 0.15 per cent. C,* 2s. 2¼d. per lb. Cr; 0.10 per cent. C,* 2s. 2¾d. per lb. Cr; 0.06 per cent. C,* 2s. 3d. per lb. Cr.

Metallic Chromium.—98/99 per cent., 7s. 2½d. to 7s. 9½d. per lb.

Metallic Manganese.—94/96 per cent., carbon-free, £265 0s. 0d.; 96/98 per cent., £295 0s. 0d.

Ferro-columbium.—65/75 per cent., Nb + Ta, 20s. 9d. per lb., Nb + Ta.

Ferro-manganese (home).—78 per cent., £83 0s. 0d.

SEMI-FINISHED STEEL

Re-rolling Billets, Blooms, and Slabs.—BASIC: Soft u.t., £32 15s. 6d.; tested, 0.08 to 0.33 per cent. C, £33 15s., 6d.; hard (0.41 to 0.60 per cent. C), £34 17s. 0d.; silico-manganese, £43 16s. 6d.; free-cutting, £36 14s. 6d. SIEMENS MARTIN ACID: Up to 0.25 per cent. C, £41 1s. 0d.; silico-manganese, £44 4s. 0d.

Billets, Blooms, and Slabs for Forging and Stamping.—Basic, soft, up to 0.33 per cent. C, £38 10s. 0d.; basic, hard, over 0.41 up to 0.60 per cent. C, £39 12s. 6d.; acid, up to 0.25 per cent. C, £43 4s. 0d.

FINISHED STEEL

Heavy Plates and Sections.—Ship plates (N.-E. Coast), £42 2s. 0d.; boiler plates (N.-E. Coast), £44 12s. 0d.; floor plates (N.-E. Coast), £43 11s. 0d.; angles (N.-E. Coast), £39 16s. 6d.; joists (N.-E. Coast), £39 12s. 6d.

Small Bars, Sheets, etc.—Rounds and squares, under 3 in., and flats, 5 in. wide and under, untested soft basic, 50 tons and over: £40 0s. 6d; under 10 tons to 4 tons, £40 18s. 0d.; under 4 tons to 2 tons, £41 3s. 0d.; hoop and strip, coils, £39 0s. 0d.; uncoated strip mill coils, hot rolled, under 3mm. to 12g., £44 16s. 0d.; black sheets (hand mill), 24g., £58 14s. 6d.; galvanized corrugated sheets, 24g., £66 16s. 0d.

Alloy Steel Bars.—1 in. dia. and up: Nickel, £68 10s. 0d.; nickel-chrome, £99 11s. 0d.; nickel-chrome-molybdenum, £111 19s. 0d.

NON-FERROUS METALS

Copper.—Cash, £178 0s. 0d. to £178 10s. 0d.; three months, £179 10s. 0d. to £179 15s. 0d.; settlement, £178 10s. 0d.

Copper Tubes, etc.—Solid-drawn tubes, 1s. 8¾d. per lb.; rods, 189s. 9d. per cwt. basis; 20 s.w.g., 232s. 0d. per cwt.

Tin.—Cash, £731 0s. 0d. to £732 0s. 0d.; three months, £733 10s. 0d. to £734 0s. 0d.; settlement, £733 0s. 0d.

Lead (Refined Pig).—Second half April, £73 10s. 0d. to £73 12s. 6d.; second half July, £73 12s. 6d. to £73 15s. 0d.

Zinc.—Second half April, £62 12s. 6d. to £62 15s. 0d.; second half July, £63 0s. 0d. to £63 2s. 6d.

Zinc Sheets, etc.—Sheets, 15g. and thicker, all English destinations, £96 10s. 0d.; rolled zinc (boiler plates), all English destinations, £94 5s. 0d.; zinc oxide (Red Seal), d/d buyers' premises, £85 10s. 0d.

Brass Tubes, etc.—Solid-drawn tubes, 1s. 5½d. per lb.; sheets to 10 w.g., 154s. 3d. per cwt.; wire, 2s. 2¾d.; rolled metal, 154s. 3d. per cwt.

Brass (Brazing).—BS1400, B3 (65/35), £129; B6 (85/15), — ; BS249, —.

Brass (High Tensile).—BS1400, HTB1 (30 tons), £164; HTB2 (38 tons), £185; HTB3 (48 tons), —.

Gunmetal.—BS1400, LG2 (85/5/5/5), £154; LG3 (86/7/5/2), £165; G1 (88/10/2/½), £223; (88/10/2/1), £210.

Phosphor Bronze.—BS1400, PB1 (AID released), £240 per ton.

Phosphor Bronze Strip, etc.—Strip, 226s. 0d. per cwt.; wire, 3s. 6d. per lb.; rods, 2s. 9½d.; tubes, 2s. 9½d.; chill cast bars: solids 2s. 10½d.; cored 2s. 11½d. (CHARLES CLIFFORD, LIMITED.)

Nickel Silver, etc.—Rolled metal, 3 in. to 9 in. wide × 0.056, 3s. 5d. per lb.; round wire, 10g. in coils (10 per cent.), 3s. 9¾d.; special quality turning rod, 10 per cent., ½ in. dia., in straight lengths, 3s. 8¾d. All prices are net.

Other Metals.—Magnesium, ingots, 2s. 5½d. per lb. Antimony, English, 99 per cent., £190 0s. 0d. Quicksilver, ex-warehouse, £76 0s. 0d. to £77 0s. 0d. Nickel, £600 0s. 0d. Aluminium ingots, £180 0s. 0d.; aluminium bronze (BS1400), AB1, £201; AB2, £216.

* Average 68-70 per cent.

Contracts Open

The dates given are the latest on which tenders will be accepted. The addresses are those from which forms of tender may be obtained. Details of tenders with the reference ESB can be obtained from the Board of Trade Export Services Branch, Lacon House, Theobalds Road, London, W.C.1 (telephone: CHAncery 4411, ext. 738 or 771), unless otherwise stated.

AUSTRALIA, May 14—Ten diesel electric locomotives. (ESB/10109/58.)

BECKENHAM—The Borough Council invites tenders for the supply of one mechanical shovel with full-width bucket. Further particulars from the Borough Engineer, Town Hall, Beckenham.

COOKSTOWN, TYRONE, May 9—Supply and laying of approximately four miles of 4-in. dia. spun-iron water main, between the Townlands of Tamlaghtmore, Drumbanaway, Dromore and Elagh, for R.D.C. Documents from R. Ferguson and S. McIlveen, consulting engineers, 15, College Gardens, Belfast, or James McCammon, Clerk to the Council, Rural Council Offices, Cookstown. Deposit £3 3s.

JAMAICA—Stanley Motta, Limited, 109, Harbour Street (P.O. Box 341), Kingston, are interested in representing a U.K. manufacturer of domestic electric cookers. (ESB/7693/58.)

MIDDLESBROUGH, May 9—Following for the period July 1, 1958, to June 30, 1959: C.I. manhole covers and gully grates. Particulars from the Borough Engineer, Municipal Buildings, Middlesbrough.

PAKISTAN, May 7—Broad gauge wagons. (ESB/9997/58) and (ESB/10303/58.)

ROSS AND WHITCHURCH, May 21—Construction of approximately 22 miles of spun-iron water mains, 8-in., 6-in., 5-in., 4-in. and 3-in. dia. with incidental works. Documents from H. B. Reynolds, Clerk of the Council, "Woodside," Ross-on-Wye, Herefordshire. Deposit £5 5s.

SOUTH AFRICA, May 16—Two rotary crucible furnaces. (ESB/10187/58.)

SOUTH AFRICA, May 8—Lathes and milling machines. (ESB/10154/58.)

SOUTH AFRICA, May 22—Pneumatic surface grinders and hub wheels. (ESB/10344/58.)

SOUTH AFRICA, May 22—Drum sanding machine. (ESB/10342/58.)

SOUTH AFRICA, May 9—Woodworking machines. (ESB/10346/58.)

THAILAND, June 4—Dump trucks. (ESB/10102/58/ICA.)

USA—Mr. Roger Mead of European Trade Specialists, 15321 Triskett Road, Cleveland, Ohio, have expressed interest in the importation of metallic abrasives. The material needed is chilled-steel shot or angular abrasive of all common sizes. A substitute would be malleable iron in the same form. (ESB/8290/58.)

WORTLEY, May 24—Supply of one rubber-tyred mechanical loading shovel suitable for use on refuse-tip control. Particulars may be obtained from the Chief Public Health Inspector, Council Offices, Grenoside, Sheffield.

Forthcoming Events

MAY 6

Incorporated Plant Engineers

London branch: "What Management Requires of a Plant Engineer," by W. J. Wordsell, 7 p.m., at the Royal Society of Arts, John Adam Street, Adelphi, W.C.2.

MAY 7

Institute of British Foundrymen

Coventry and district section: Works visit to W. & T. Avery, Limited, Tamebridge Foundry, Birmingham.

Combustion Engineering Association

Meeting in Cardiff at the Park Hotel and Whitehall Rooms. Morning session commencing 10.30 a.m., "Back-pressure Generation," by P. F. Morgan; in the afternoon at 2.30 p.m., "Planned Maintenance," by T. W. Fishlock.

Recent Wills

SPARK, F. V., formerly a director of Harland & Wolff, Limited	£12,687
BULPITT, W. H., chairman and managing director of Bulpitt & Sons, Limited, manufacturers of aluminium hollow-ware and electrical appliances, of Birmingham	£51,453
PARISH, P. M., late chairman of Fry's Metal Foundries, Limited, Eyre Smelting Company, Limited, and International Smelters, Limited, and a director of other companies	£77,780

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And at:—

BIRMINGHAM, 2. 39, Corporation St., Midland 3375/6
LIVERPOOL, 2. 13, Rumford St., Central 1558
GLASGOW, C.2. 93, Hope Street, Central 9969

CLASSIFIED ADVERTISEMENTS

PREPAID RATES: Fifteen words for 7/6 (minimum charge) and 4d. per word thereafter. Box Number 2/6 extra (including postage of replies). Situations wanted 2d. per word throughout.

Advertisements (accompanied by a remittance) and replies to Box Numbers should be addressed to the Advertisement Manager, Foundry Trade Journal, John Adam House 17/19, John Adam Street, Adelphi, London, W.C.2. If received by first post Monday advertisements can normally be accommodated in the following Thursday's issue.

SITUATIONS WANTED

MANAGER wishes a change. Fully experienced in all branches of a non-ferrous foundry producing castings up to 30 cwt. Used to full control. Age 40. M.I.B.F.—Box MW740, FOUNDRY TRADE JOURNAL.

FOUNDRY REPRESENTATIVE offers services for London and the South of England. Central London Office facilities. Car. Energetic and keen. Contribution to expenses and commission. Replies to Box FR775, FOUNDRY TRADE JOURNAL.

FOUNDRY MANAGER (49) Free. Desires similar North England, or West of Scotland. Heavy marine, engineering, mechanisation, sugar, machine tool. Technical, Practical Results guaranteed. Disciplinarian.—Box FM750, FOUNDRY TRADE JOURNAL.

IRON MOULDER seeks position, age 25, married. General and machine tool castings. Pounds to 30 tons. Experienced in green, dry, loam, and CO_2 work, read drawings, estimate, car driver, anything considered. Box IM779, FOUNDRY TRADE JOURNAL.

PRACTICAL FOUNDRYMAN, 47, 16 years' executive experience, supplying machine tool, motor, and agricultural trades. Jobbing, green, dry, CO_2. Small to medium foundry, requiring improved quality, production, sales. Box PF776, FOUNDRY TRADE JOURNAL.

FOUNDRY MANAGER desires similar or as Technical Sales Representative position. Grey, high duty irons, non-ferrous metals, sands, cupola control, CO_2 moulds and cores, mass production and jobbing. Metallurgically trained. Sales experience. Lancs area. Box FM777, FOUNDRY TRADE JOURNAL.

FOUNDRY MANAGER (30) seeks similar position in small foundry or assistant managership in larger foundry. Pattern shop, methods and estimating experience. Green dry and CO_2 sand moulding of jobbing and machine tool castings up to 20 tons. Apprentice trained. C. & G. Final 1st class. National Cert. Mech. Eng. West Riding preferred but not essential. A.M.I.B.F. Box FS778, FOUNDRY TRADE JOURNAL.

EXPERIENCED FOUNDRY MANAGER (51), with proved ability to obtain results competitively, seeks position with reputable firm. Possesses full practical and technical experience in the manufacture of iron castings (Machine Tools, Pumps, etc.) up to 40 tons individual weight. Also extensive experience of bronze and light alloys coupled with advanced metallurgical knowledge. Box EF754, FOUNDRY TRADE JOURNAL.

SITUATIONS VACANT

FIRST-CLASS FOREMAN / SUPERINTENDENT required for Aluminium Gravity Die Foundry. High salary will be paid to suitable applicant. Only fully experienced men need apply; accommodation available.—Apply CAMBRIAN CASTINGS, LTD., Hirwaun Industrial Estate, Aberdare, near Cardiff, Glam.

FOUNDRY TECHNICIAN.

WEST MIDLANDS Ironfoundry invites applications from suitably experienced men. Responsibilities include investigation of Foundry scrap problems, together with design of suitable running systems and pattern layouts. Candidates should be of a definite, practical nature, preferably with metallurgical knowledge, although this is not essential.—Full details in strict confidence, including age and salary range, to MANAGING DIRECTOR, Box FT773, FOUNDRY TRADE JOURNAL.

FOREMAN REQUIRED

FOR ALUMINIUM SAND FOUNDRY

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Keen energetic top-class man, 30 to 40 years of age. Practical experience of floor and machine moulding (rollover and pin-lift), sand rammer, coremaking (CO_2, shell and oil-bonded). Capable of producing Class I aircraft castings; strict disciplinarian. Commencing salary £850 per annum, plus efficiency bonus; contributory pension scheme after probationary period. Write, stating experience, age, etc., to:

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FOUNDRY TRADE JOURNAL.

FOUNDRY MANAGER

is required for a modern foundry specialising in high alloy steel castings. Administrative ability and sound practical experience of a medium sized foundry are more important than advanced metallurgical knowledge, although this would be an added advantage.

This is a senior executive appointment, carrying a substantial salary and the usual emoluments, including a non-contributory pension scheme, assistance with housing, etc.

Applications, which will be treated in strictest confidence, should be addressed to the MANAGING DIRECTOR, SHEEPRIDGE ALLOY CASTINGS LIMITED, Hamilton Road, Sutton-in-Ashfield, Notts.

SITUATIONS VACANT—cont'd

CHILL and Continuous Cast Phosphor Bronze Bars. SALESMAN required for Northern Area. Knowledge of trade preferable but not essential. Details to Box CA767, FOUNDRY TRADE JOURNAL.

WAREHOUSE AND DESPATCH CLERK required.—Write, stating age, experience, and salary, to KINGSWORTHY FOUNDRY CO., LTD., Winchester, Hants.

FOREMAN required for Non-ferrous Foundry of South Midland Engineering Co., producing Aluminium and Copper Base Castings. Age 35/50. Salary £ p.a., plus bonuses. State age and experience.—Box FR757, FOUNDRY TRADE JOURNAL.

TECHNICAL SALES REPRESENTATIVE.

A QUALIFIED METALLURGIST experienced in steelmaking and with a knowledge of iron founding, is required by one of the leading producers and suppliers of ferro-alloys and metals. The successful applicant will be based on Birmingham for operations in that area and the Southern half of the country. The appointment is an important one, and will give considerable scope and opportunities for real advancement to the right man. Send all details, including salary required, by letter in the first instance, to the SALES MANAGER Union Carbide, Ltd., Alloys Division, 103, Mount Street, London, W.1.

FULL-TIME REPRESENTATIVE required for sales of Malleable Iron Castings in Lancs, Yorks, Cheshire and Northern Counties. Live man with proven sales record and good connections. Apply with full details of age, experience and remuneration required, to Box FT765, FOUNDRY TRADE JOURNAL.

FOUNDRY TECHNICAL SERVICE. Well-known foundry requires additional REPRESENTATIVE for technical liaison with customers' Machine Shops and Inspection Departments. Should have good background in pattern-making or machining and inspection of castings and additional training will be given to suitable candidate. Willing to travel—should reside near Black Country area. Permanent responsible position. Staff appointment, Pensions Scheme, etc. State age, experience and salary range to Box FT766, FOUNDRY TRADE JOURNAL.

YOUNG METALLURGIST, age 25-30, with H.N.C. or L.I.M. preferred, required by Engineering Company in South Manchester area to take charge of laboratories now in course of erection. This appointment offers development work over a broad field and carries excellent superannuation scheme, sports and social facilities and staff canteen. Replies in confidence stating age, qualifications, experience and salary required.—Box YM742, FOUNDRY TRADE JOURNAL.